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UK METEOROLOGICAL OFFICE GLOBAL DATA MONITORING REPORT

OCTOBER, 94

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CONTENTS

1. Introduction

2. Global Data Monitoring Statistics

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIBU observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12 UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 ms^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 $m\ s^{-1}$ have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed ($m\ s^{-1}$)
7	RMS observation-background vector ($m\ s^{-1}$)

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-11 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-12. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1. |bias| ≥ 4 hPa (pressure),
≥ 5 $m\ s^{-1}$ (wind speed),
≥ 30 degrees (direction).

2. SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

3. PGE ≥ 25

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CZ9742	ALL	MSLP	SUR	47	47	100	0.0	0.0	0.0
C6BK6	ALL	MSLP	SUR	23	0	0	1.1	-5.7	5.8
C6FA6	ALL	MSLP	SUR	41	0	0	1.6	-5.8	6.0
C6GR	ALL	MSLP	SUR	49	20	41	1.7	13.0	13.1
C6KB6	ALL	MSLP	SUR	32	0	0	1.5	-6.4	6.5
HZXR	ALL	MSLP	SUR	31	0	0	1.4	-5.2	5.3
P3NE5	ALL	MSLP	SUR	41	0	0	1.7	6.0	6.2
UFBE	ALL	MSLP	SUR	21	0	0	0.9	4.1	4.2
UULU	ALL	MSLP	SUR	22	9	41	1.7	-1.0	2.0
VOWN	ALL	MSLP	SUR	22	19	86	0.3	-9.5	9.5
VPHW	ALL	MSLP	SUR	23	0	0	1.6	-7.0	7.2
VRUA4	ALL	MSLP	SUR	74	0	0	1.5	4.2	4.4
WCB5820	ALL	MSLP	SUR	63	0	0	2.5	6.8	7.3
WXY6216	ALL	MSLP	SUR	22	1	5	2.7	-4.2	5.0
WZE4928	ALL	MSLP	SUR	50	47	94	6.0	7.5	9.6
9MSS	ALL	MSLP	SUR	29	0	0	1.3	-4.3	4.5
WIND SPEED									
C6DY8	ALL	SPEED	SUR	24	2	8	3.4	6.5	7.4
C6JD4	ALL	SPEED	SUR	38	9	24	6.7	13.7	15.3
C6MM5	ALL	SPEED	SUR	25	0	0	3.9	8.9	9.7
DEOF	ALL	SPEED	SUR	28	0	0	4.0	5.5	6.8
DVPZ	ALL	SPEED	SUR	23	0	0	3.9	7.1	8.2
D5AN	ALL	SPEED	SUR	26	0	0	5.9	5.4	8.0
FNIH	ALL	SPEED	SUR	160	1	1	3.8	7.8	8.7
FNRV	ALL	SPEED	SUR	20	1	5	6.1	7.1	9.3
HPEW	ALL	SPEED	SUR	31	0	0	4.6	8.3	9.5
HP7810	ALL	SPEED	SUR	61	0	0	4.3	5.2	6.7
PJNF	ALL	SPEED	SUR	21	0	0	6.2	7.7	9.8
P3LE5	ALL	SPEED	SUR	27	0	0	3.1	-6.1	6.8
S6HL	ALL	SPEED	SUR	23	0	0	1.5	5.5	5.7
UPKU	ALL	SPEED	SUR	34	0	0	3.9	6.7	7.7
WBKX	ALL	SPEED	SUR	30	0	0	2.6	5.7	6.3
WFJK	ALL	SPEED	SUR	23	0	0	5.4	5.6	7.8
WIND DIRECTION									
PJRB	ALL	DIRN.	SUR	29	0	0	64.3	-36.3	73.8
UFBE	ALL	DIRN.	SUR	21	0	0	83.3	-21.5	86.1
21004	ALL	DIRN.	SUR	62	0	0	25.5	47.0	53.5
42028	ALL	DIRN.	SUR	32	0	0	108.3	-90.7	141.3
42030	ALL	DIRN.	SUR	60	0	0	61.3	-35.0	70.6
45136	ALL	DIRN.	SUR	97	0	0	89.9	-32.3	95.5
46027	ALL	DIRN.	SUR	47	0	0	30.1	-30.9	43.1
46029	ALL	DIRN.	SUR	45	0	0	36.6	38.1	52.8
46053	ALL	DIRN.	SUR	50	0	0	50.9	-41.9	65.9
46131	ALL	DIRN.	SUR	45	0	0	43.5	-30.3	53.1
46146	ALL	DIRN.	SUR	51	0	0	51.8	-39.6	65.2
46181	ALL	DIRN.	SUR	51	0	0	66.3	-55.0	86.1

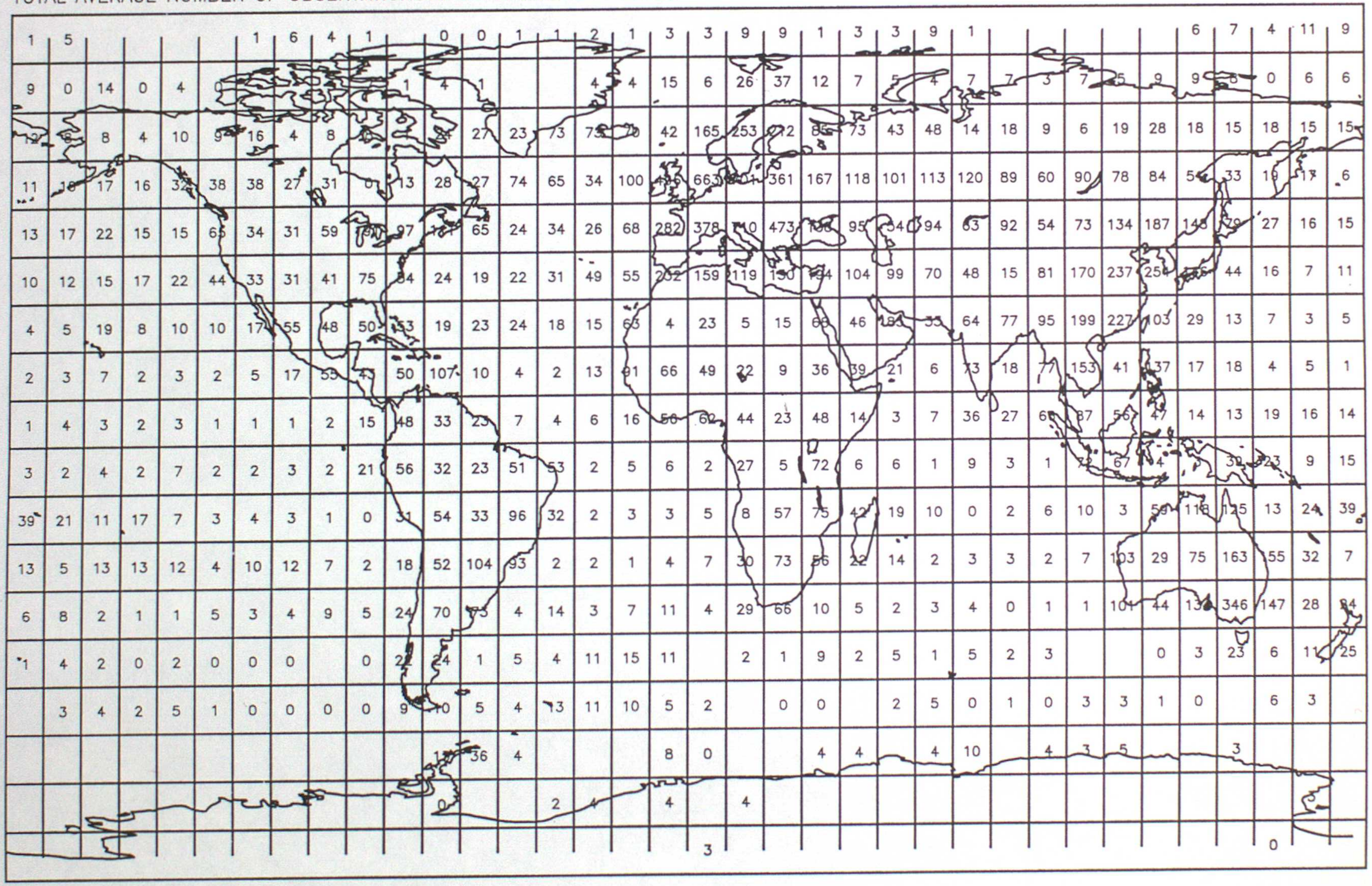
AVAILABILITY – SHIP/SYNOP – OCTOBER 1994

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 19730

FIGURE 1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11 18 17 16 32 38 38 27 31 0 13 28 27 74 65 34 100 416 663 401 361 167 118 101 113 120 89 60 90 78 84 54 33 19 17 6
13 17 22 15 15 65 34 31 59 90 97 141 65 24 34 26 68 282 378 710 473 156 95 54 94 63 92 54 73 134 187 148 79 27 16 15
10 12 15 17 22 44 33 31 41 75 84 24 19 22 31 49 55 202 159 119 150 194 104 99 70 48 15 81 170 237 254 76 44 16 7 11
4 5 19 8 10 10 17 55 48 50 153 19 23 24 18 15 63 4 23 5 15 66 46 183 33 64 77 95 199 227 103 29 13 7 3 5
2 3 7 2 3 2 5 17 55 43 50 107 10 4 2 13 91 66 49 22 9 36 39 21 6 73 18 77 153 41 37 17 18 4 5 1
1 4 3 2 3 1 1 1 2 15 48 33 23 7 4 6 16 56 62 44 23 48 14 3 7 36 27 65 87 56 47 14 13 19 16 14
3 2 4 2 7 2 2 3 2 21 56 32 23 51 53 2 5 6 2 27 5 72 6 6 1 9 3 1 72 67 4 32 23 9 15
39 21 11 17 7 3 4 3 1 0 31 54 33 96 32 2 3 3 5 8 57 75 42 19 10 0 2 6 10 3 59 118 125 13 24 39
13 5 13 13 12 4 10 12 7 2 18 52 104 93 2 2 1 4 7 30 73 56 22 14 2 3 3 2 7 103 29 75 163 55 32 7
6 8 2 1 1 5 3 4 9 5 24 70 73 4 14 3 7 11 4 29 66 10 5 2 3 4 0 1 1 101 44 138 346 147 28 84
1 4 2 0 2 0 0 0 0 22 24 1 5 4 11 15 11 2 1 9 2 5 1 5 2 3 0 3 23 6 11 25
3 4 2 5 1 0 0 0 0 9 10 5 4 13 11 10 5 2 0 0 2 5 0 1 0 3 3 1 0 6 3
17 36 4 8 0 4 4 4 10 4 3 5 3
0 2 4 4 4
3 0

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1. |bias| ≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).

2. SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

3. PGE ≥ 25.

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
31907	-51.7	-23.6	ALL	MSLP	SUR	28	3	11	3.3	4.8	5.8
WIND SPEED											
46527	43.8	169.4	ALL	SPEED	SUR	86	0	0	2.9	-6.9	7.5
62508	45.7	-18.1	ALL	SPEED	SUR	68	1	1	4.8	5.2	7.1
62509	47.9	-19.1	ALL	SPEED	SUR	81	0	0	4.9	5.9	7.7
WIND DIRECTION											
46657	47.4	-162.9	ALL	DIRN.	SUR	33	0	0	24.6	-36.5	44.0
64544	63.6	-35.7	ALL	DIRN.	SUR	65	0	0	34.3	36.7	50.3

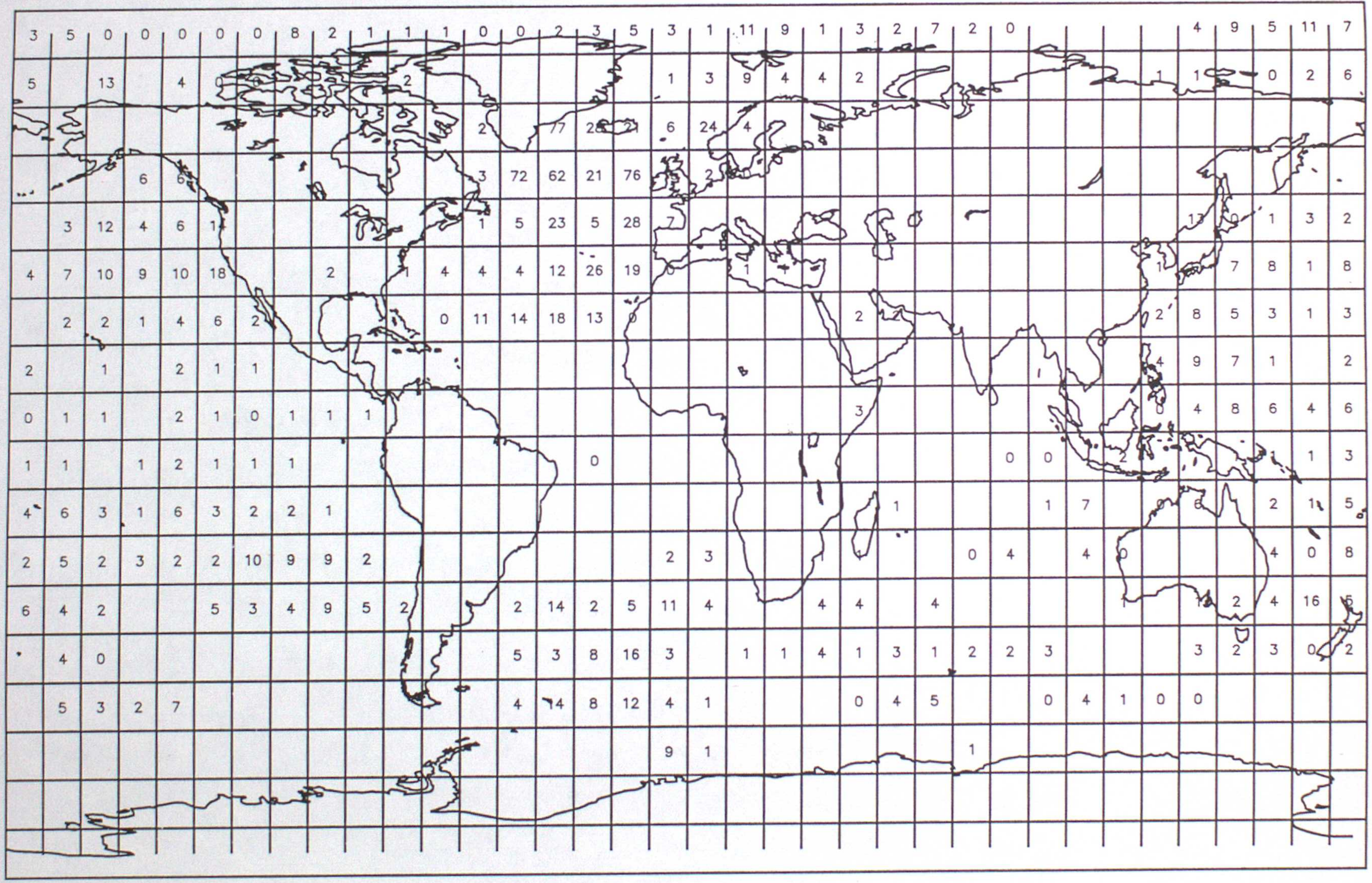
AVAILABILITY – DRIBU – OCTOBER 1994

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 1436

FIGURE 2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5 13 4 0 0 2 1 3 9 4 4 2 1 1 0 2 6
2 77 26 21 6 24 4
6 6 3 72 62 21 76 2
3 12 4 6 1 1 5 23 5 28 7 13 0 1 3 2
4 7 10 9 10 18 2 1 4 4 4 12 26 19 0 1 1 7 8 1 8
2 2 1 4 6 2 0 11 14 18 13 0 2 2 8 5 3 1 3
2 1 2 1 1 4 9 7 1 2
0 1 1 2 1 0 1 1 1 3 0 4 8 6 4 6
1 1 1 2 1 1 1 0 0 0 2 1 1 3
4 6 3 1 6 3 2 2 1 1 1 7 6 2 1 5
2 5 2 3 2 2 10 9 9 2 2 3 1 0 4 4 0 4 0 8
6 4 2 5 3 4 9 5 2 2 14 2 5 11 4 4 4 4 1 12 2 4 16 5
4 0 5 3 8 16 3 1 1 4 1 3 1 2 2 3 3 2 3 0 2
5 3 2 7 4 14 8 12 4 1 0 4 5 0 4 1 0 0
9 1 1

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flaggled.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)

SELECTION CRITERIA :NOBS ≥ 20 ,and one or more of the following:

1. |bias| ≥ 4 hPa
2. SD ≥ 6 hPa
3. PGE ≥ 25.

Note:- For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	111	0	0	93	1.0	4.6	4.7
60468	35.6N	6.2E	1052	S8	104	103	99	8	0.0	-1.8	1.8
60511	35.3N	1.4E	1127	S8	100	100	100	100	0.0	0.0	0.0
60571	31.6N	2.2W	773	S8	109	3	3	22	1.0	-4.1	4.2
60670	24.6N	9.5E	1054	S8	110	0	0	99	1.2	8.5	8.6
61731	13.3N	14.2W	4	M	30	0	0	97	1.0	-5.4	5.5
62795	12.7N	34.1E	445	MS	22	0	0	27	1.3	-4.4	4.6
63333	11.1N	39.7E	1916	MS	74	1	1	96	1.1	7.0	7.1
63402	7.7N	36.8E	1577	M	52	37	71	98	2.5	-13.3	13.5
63453	8.8N	39.8E	1062	S	70	1	1	99	1.1	11.8	11.9
63474	7.1N	40.0E	2450	S	52	52	100	0	0.0	0.0	0.0
63478	5.1N	44.6E	320	MS	53	0	0	38	1.3	7.0	7.1
63801	4.9S	29.6E	885	S8	23	2	9	83	1.5	8.3	8.4
64503	3.4S	10.7E	34	M	25	0	0	68	1.5	-7.2	7.4
64507	2.9S	11.0E	79	M	56	0	0	70	1.5	-7.2	7.4
64911	5.0N	9.9E	821	8	51	0	0	51	1.5	-5.7	5.9
68014	19.6S	18.1E	1411	S8	48	2	4	44	2.2	-5.2	5.6
68752	32.8S	27.4E	524	S8	79	0	0	99	1.1	-8.1	8.2

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
25902	60.8N	151.8E	797	MS	56	10	18	98	2.2	-12.5	12.7
29999	52.5N	99.8E	1570	S8	90	88	98	71	3.1	6.8	7.5
30554	54.5N	113.6E	995	MS	57	1	2	98	1.1	9.9	10.0
30739	52.2N	109.8E	666	MS	57	0	0	33	3.1	-4.6	5.5
30741	52.9N	110.5E	1255	S8	114	5	4	44	2.2	-4.5	5.0
38609	40.1N	70.6E	832	MS	26	3	12	62	0.9	-4.6	4.7
38696	39.6N	66.9E	675	MS	58	0	0	98	1.0	-5.3	5.4
40356	31.7N	38.7E	818	S8	111	0	0	92	1.0	-4.3	4.4
40376	27.6N	38.6E	860	MS	65	65	100	0	0.0	0.0	0.0
40432	25.8N	42.0E	783	MS	65	65	100	0	0.0	0.0	0.0
40450	23.7N	44.6E	1080	MS	43	43	100	0	0.0	0.0	0.0
40701	39.3N	44.4E	1470	S	93	0	0	89	1.1	6.5	6.6
40723	37.5N	57.3E	1074	MS	94	1	1	3	1.0	-4.1	4.2
40726	36.8N	45.7E	1385	MS	86	3	3	67	2.3	4.3	4.9
40743	36.2N	57.7E	941	MS	104	0	0	22	1.3	-4.9	5.1
40762	35.3N	59.2E	1333	MS	102	25	25	98	0.9	-13.4	13.4
40763	35.2N	58.5E	1060	MS	49	0	0	22	1.4	-5.5	5.7
40783	32.4N	49.7E	1972	MS	45	0	0	91	1.3	-5.8	5.9
40789	33.8N	55.1E	921	MS	81	1	1	96	1.2	8.0	8.1
40836	30.8N	51.7E	1880	MS	90	1	1	82	1.3	7.0	7.1
40859	29.0N	53.7E	1383	MS	86	0	0	100	1.3	8.8	8.9
41254	23.1N	57.7E	1755	S8	82	82	100	80	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	26	1	4	54	1.6	5.9	6.1
44277	46.4N	96.3E	2147	MS	94	1	1	6	1.8	-5.2	5.5
44292	47.9N	107.0E	1338	MS	84	0	0	14	1.6	4.9	5.2
44416	28.6N	81.6E	720	MS	41	0	0	10	1.3	5.1	5.3
44477	27.0N	87.4E	1445	S8	36	32	89	94	8.5	0.5	8.5
51334	44.6N	82.9E	321	M	117	0	0	4	2.8	4.2	5.0
51467	42.7N	86.3E	1753	S	115	0	0	6	1.8	6.2	6.5
52602	38.8N	93.4E	2734	S	116	0	0	14	1.5	-5.8	6.0
52866	36.7N	101.8E	2296	S	117	0	0	45	1.5	5.3	5.5
56144	31.7N	98.6E	3204	S	104	1	1	13	2.6	-4.1	4.9
56287	30.0N	103.0E	629	M	117	0	0	45	1.6	5.2	5.4
56444	28.5N	98.9E	3488	S	116	116	100	100	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	115	0	0	30	2.7	5.6	6.2
57622	28.9N	107.2E	1907	S	111	4	4	30	1.1	-11.8	11.9
57816	26.5N	106.7E	1222	MS	115	108	94	97	1.7	13.8	13.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83208	12.7S	60.1W	652	MS	52	0	0	2	1.3	5.4	5.6
83235	12.3S	46.4W	660	MS	33	0	0	85	0.8	5.8	5.9
83295	13.4S	39.9W	755	MS	28	0	0	86	0.7	-5.2	5.2
83332	14.1S	46.4W	950	MS	70	8	11	100	1.4	13.1	13.2
83423	16.7S	49.3W	729	MS	73	0	0	47	1.3	-5.1	5.3
83488	17.8S	42.9W	1097	MS	77	77	100	100	0.0	0.0	0.0
83512	18.5S	54.8W	286	MS	64	1	2	45	2.0	-5.5	5.9
83531	18.6S	46.5W	896	MS	75	1	1	57	1.9	-7.0	7.3
83586	19.5S	44.3W	732	MS	78	0	0	12	1.9	-4.2	4.6
83587	19.8S	43.9W	850	MS	81	0	0	26	1.2	-8.5	8.6
83689	21.3S	43.8W	1171	MS	65	0	0	80	1.0	4.3	4.4
83704	22.3S	53.9W	369	MS	62	0	0	53	4.3	-6.5	7.8
83811	24.4S	50.8W	808	M	42	0	0	64	2.6	5.5	6.1
83953	30.9S	55.5W	231	M	32	0	0	56	3.7	4.4	5.7
84401	5.2S	80.6W	50	MS	109	0	0	0	1.6	4.0	4.3
84425	5.9S	76.1W	184	MS	72	1	1	1	2.8	5.7	6.4
84455	6.5S	76.4W	282	MS	83	0	0	14	2.4	6.4	6.8
84472	7.1S	78.5W	2622	S	63	0	0	90	1.9	-7.8	8.0
84501	8.1S	79.0W	30	MS	111	0	0	1	1.4	4.3	4.5
84531	9.2S	78.5W	21	MS	59	0	0	0	1.3	5.8	5.9
84658	12.6S	69.2W	266	MS	86	0	0	0	2.8	6.2	6.8
84686	13.6S	72.0W	3249	S	110	0	0	45	2.1	-7.8	8.1
84782	18.1S	70.3W	469	MS	108	0	0	0	1.9	5.5	5.8
85406	18.3S	70.3W	58	M	112	0	0	1	1.5	5.7	5.9
87046	24.4S	65.1W	905	S8	80	80	100	33	0.0	0.0	0.0
87322	31.3S	66.6W	658	MS	78	78	100	0	0.0	0.0	0.0
87814	43.8S	68.9W	460	MS	49	0	0	2	1.5	-4.0	4.3

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
76118	30.4N	109.7W	1040	MS	43	1	2	98	0.9	-10.3	10.3
76373	25.3N	105.8W	1967	MS	63	50	79	98	0.5	14.1	14.1
76539	22.1N	101.0W	1871	MS	96	1	1	86	1.4	-5.3	5.5
76632	20.1N	98.7W	2417	MS	60	0	0	100	1.1	-7.9	8.0
76692	19.1N	96.1W	13	MS	85	0	0	6	1.2	4.1	4.3
76726	18.9N	99.3W	1560	MS	79	1	1	99	1.3	-8.4	8.5
76750	18.5N	88.3W	3	MS	102	0	0	16	1.0	-4.4	4.5
76762	17.5N	99.5W	1360	MS	90	2	2	99	1.0	11.2	11.2
76848	16.3N	92.1W	1530	MS	102	20	20	98	0.8	-13.8	13.8

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94001	6.1S	141.3E	-9999	M	86	0	0	1	1.2	4.2	4.4

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.6N	9.7E	630	MS	83	1	1	96	1.6	-5.2	5.4
08221	40.5N	3.6W	633	MS	98	0	0	98	1.1	6.2	6.3
11078	48.0N	15.6E	681	MS	115	0	0	77	1.7	-4.1	4.4
11141	47.4N	13.2E	550	MS	116	0	0	9	1.5	4.0	4.3
11241	47.2N	15.5E	1438	S8	84	47	56	82	5.4	-5.5	7.7
11346	47.3N	12.8E	917	S	44	0	0	73	1.2	-4.2	4.4
11360	47.5N	14.1E	710	MS	30	0	0	3	1.0	4.0	4.1
15052	47.4N	25.6E	1541	S8	109	4	4	30	1.5	-6.8	7.0
16020	46.5N	11.3E	1461	MS	56	56	100	0	0.0	0.0	0.0
16134	44.2N	10.7E	2173	S8	112	2	2	29	1.6	-4.5	4.8
16614	40.4N	21.3E	604	MS	113	0	0	100	1.2	-7.6	7.7
17084	40.6N	35.0E	837	MS	114	0	0	100	1.0	7.4	7.5
17190	38.8N	30.5E	1034	S8	113	0	0	72	0.9	4.4	4.5
17260	37.1N	37.4E	855	MS	113	110	97	100	0.7	14.2	14.2
34357	49.6N	42.8E	129	MS	116	1	1	94	2.1	9.3	9.5
37228	43.1N	44.6E	670	MS	57	0	0	81	2.1	-4.0	4.5
40184	31.8N	35.2E	809	S8	113	0	0	100	1.1	7.1	7.2

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89667	78.0S	166.5E	20	MS	96	0	0	2	3.5	4.9	6.0
89757	73.8S	55.7E	2775	S7	73	73	100	67	0.0	0.0	0.0
89762	68.7S	60.6E	1850	M	21	18	86	19	7.3	-2.5	7.7
89803	68.5S	102.2E	2118	S7	80	5	6	50	2.8	-9.1	9.5
89805	74.1S	109.8E	3070	S7	80	36	45	8	4.1	-1.1	4.2
89811	66.7S	112.9E	1362	M	79	3	4	65	3.1	-8.2	8.8
89828	74.5S	123.0E	3280	S7	99	10	10	36	3.7	6.7	7.7
89832	66.7S	139.8E	240	MS	58	58	100	100	0.0	0.0	0.0
89860	74.2S	160.3E	1772	S8	93	0	0	18	3.3	-6.4	7.2
89866	77.4S	163.8E	120	MS	94	0	0	4	3.4	5.3	6.3

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in $m\ s^{-1}$

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 $m\ s^{-1}$ Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	187	1	6	3.7	-1.2	186	0	5	1	11.8	3.5
AAL	4613	0	1	1.8	0.1	4596	0	2	0	8.4	1.5
AAN	161	1	4	1.5	-0.5	152	0	5	0	8.5	0.6
AAR	1810	1	1	1.7	-0.2	1800	0	2	0	8.3	1.0
ACA	838	0	1	1.9	0.0	844	0	1	0	7.7	0.9
ACI	65	5	5	1.4	0.6	64	0	2	0	8.4	1.8
AEA	127	6	10	2.4	0.3	123	0	7	0	8.9	0.0
AEL	231	7	8	2.2	0.5	235	0	5	0	10.0	1.2
AFL	143	1	95	4.3	2.2	147	0	96	3	14.0	0.9
AFR	1106	1	4	1.9	0.1	1135	0	5	1	8.4	1.6
AJJ	116	1	3	2.7	0.6	118	0	1	0	10.1	0.2
AMT	352	0	3	1.9	0.6	358	0	2	0	7.6	1.9
AMX	311	1	98	2.4	-0.2	316	0	3	0	9.0	0.8
ANA	879	0	1	1.7	-0.5	882	0	1	0	8.7	1.1
ANZ	3254	1	3	2.0	-0.1	3221	0	3	1	8.4	1.3
AOM	559	1	3	1.6	0.4	571	0	2	0	8.4	1.1
ARP	56	2	21	1.1	0.4	56	0	21	0	8.8	1.4
ATN	20	0	5	3.8	-2.4	20	0	100	0	12.2	2.5
AUA	67	0	1	2.2	-1.5	68	0	1	0	7.4	2.0
AVA	415	1	1	1.8	0.1	417	0	4	0	9.2	1.3
AVN	31	0	0	1.6	0.5	30	0	0	0	8.5	1.0
AZA	439	2	4	2.1	0.4	447	0	3	0	8.8	1.2
BAL	341	1	11	1.9	-0.2	350	0	13	1	9.3	1.4
BAW	1579	0	2	1.7	-0.1	1594	0	3	0	8.1	1.2
BBB	47	4	11	1.3	-0.5	47	2	15	0	9.4	2.0
BWA	453	1	2	1.6	0.7	464	0	3	0	9.2	2.0
CAL	1912	0	1	1.8	-0.2	1909	0	2	0	8.6	1.0
CCA	296	1	3	3.1	0.8	298	0	6	0	12.0	0.2
CDN	2283	0	1	1.9	0.4	2290	0	2	0	8.1	1.0
CES	225	1	2	2.0	0.6	226	0	1	0	10.0	0.6
CFG	829	0	1	1.7	-0.7	842	0	2	0	8.2	0.9
CKS	118	2	8	2.6	0.7	118	0	94	0	8.4	1.5
CKT	66	0	2	1.4	0.5	66	2	5	0	7.9	2.5
CLI	100	0	0	1.7	-0.2	105	0	0	0	5.7	0.5
CLX	93	0	1	1.9	-0.9	94	0	2	1	8.9	0.0
CMI	1127	2	3	2.0	0.7	1151	0	5	3	8.6	1.7
CMM	232	0	2	1.8	0.0	242	0	1	0	7.7	1.1
COA	952	1	1	1.6	0.4	956	0	1	0	7.3	1.3
CPA	73	1	3	2.0	-0.3	72	0	3	0	7.5	1.3
CRL	197	1	1	1.7	-0.6	199	0	4	1	8.3	1.7
CTM	58	0	10	2.7	-1.8	58	0	10	0	9.0	2.8
CUB	244	2	6	2.3	0.9	244	0	8	1	10.1	0.8
DAE	35	6	6	2.7	0.8	35	0	0	0	8.1	-1.2
DAL	5603	0	2	2.0	0.6	5389	0	2	0	8.4	1.3
DHL	254	5	98	3.9	-2.2	252	0	98	1	9.2	0.6
DLH	2532	0	3	2.0	-0.1	2556	0	5	2	7.6	1.1
DOA	236	1	9	2.2	0.2	235	0	8	0	8.0	1.4
EIA	58	2	7	1.7	0.1	56	2	100	0	8.2	1.7
ELY	124	0	4	2.0	-0.2	129	0	5	0	9.0	0.5
EVA	1324	1	2	1.8	-0.4	1321	0	2	0	9.1	0.8
EWW	24	0	0	2.8	1.5	30	0	7	0	16.4	3.0
FDX	926	1	2	2.0	0.9	948	0	3	0	8.7	1.0
FIN	320	0	1	1.8	0.2	319	0	3	1	8.4	0.8
FJI	426	1	2	1.8	0.7	423	0	1	0	8.4	1.2
FKC	23	0	0	3.0	-2.1	23	0	0	0	7.7	2.0
FKE	25	0	4	3.2	-1.4	25	0	0	0	9.2	-1.5
FKJ	31	6	10	3.2	-2.2	31	0	10	6	12.8	-0.6
FKO	27	0	11	3.2	0.3	27	0	4	0	11.1	2.9
GAF	164	1	1	2.3	0.7	163	0	1	0	8.9	0.8

	TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GFA	35	0	0	2.1	-0.6	34	0	0	0	8.0	0.6
GHA	33	0	3	1.3	0.1	32	0	0	0	7.0	2.2
GIA	226	2	2	1.6	0.1	218	0	1	0	7.6	1.2
HAL	1025	0	1	1.3	0.1	1025	0	2	1	8.1	1.6
HLF	130	0	3	1.6	-0.9	132	0	4	0	9.4	1.1
HRH	29	0	3	1.5	0.5	29	0	3	0	7.4	2.1
IBE	1911	1	12	1.8	0.2	1905	0	12	0	9.6	1.0
ICE	502	0	2	2.0	0.0	505	0	2	0	7.6	1.3
JAA	41	5	5	1.3	0.7	39	0	3	0	5.5	1.0
JAL	6262	0	1	1.8	0.2	6261	0	2	0	8.6	1.1
JAZ	101	0	0	1.7	1.0	101	0	1	1	7.3	2.5
KAC	21	0	0	2.5	1.6	22	0	5	0	7.0	2.8
KAL	3423	1	1	2.1	0.0	3422	0	2	0	9.2	0.9
KIW	21	0	0	4.1	3.3	21	0	0	0	8.3	0.6
KLM	2016	0	2	1.8	0.1	2009	0	2	0	8.5	1.3
LDA	283	0	5	1.8	-0.8	289	0	5	0	8.0	0.6
LDI	154	1	2	1.9	-1.1	160	0	3	0	8.1	1.2
LIB	123	1	1	1.8	0.3	124	1	2	2	8.1	1.0
LOT	397	1	2	2.1	0.7	394	0	2	0	7.3	0.9
LTU	686	0	2	1.7	0.5	665	0	3	0	8.3	1.5
LWD	232	0	1	1.3	0.4	233	0	2	1	7.4	2.4
MAS	344	1	1	1.8	-0.2	348	0	6	1	10.7	1.8
MDA	136	0	0	1.8	0.5	137	0	1	0	8.6	1.3
MKD	113	0	3	1.8	-0.2	118	0	5	0	10.9	0.6
MPH	513	0	1	1.6	-0.1	499	0	2	0	9.4	1.3
MRS	56	30	46	7.9	-6.6	56	0	21	0	13.0	5.0
NCA	739	0	2	1.8	0.4	736	0	2	1	9.1	0.9
NGA	91	1	2	1.8	0.4	90	0	96	0	11.4	-0.3
NWA	10160	0	2	2.0	0.7	10155	0	3	1	8.7	1.4
PAC	81	5	10	3.0	0.9	84	0	1	0	7.2	2.3
PAL	949	1	1	1.7	-0.2	964	0	88	2	10.5	1.6
PAO	215	3	3	1.9	0.0	210	0	1	0	7.6	1.9
PIA	28	0	7	2.7	-0.2	28	0	4	0	8.5	-1.4
PNL	136	0	1	2.2	0.7	130	0	0	0	8.2	0.4
QFA	2060	1	2	1.9	0.2	2048	0	2	1	7.6	1.5
RAF	132	0	1	1.7	0.4	130	0	2	0	9.6	2.9
RBA	30	7	7	2.0	1.0	27	0	0	0	7.7	0.0
RIA	34	0	3	3.5	2.5	41	0	12	0	12.7	1.2
RJA	60	0	2	2.7	0.2	61	0	0	0	8.0	0.2
RKA	56	0	2	1.6	0.1	56	0	0	0	7.0	2.6
RON	52	0	0	1.5	0.3	53	0	0	0	8.2	0.3
ROT	26	0	4	2.3	-1.0	26	0	4	0	10.9	-0.4
ROY	21	5	5	1.9	0.4	22	0	0	0	7.6	1.2
RRR	171	1	15	2.5	-0.1	172	1	96	0	10.7	1.5
SAA	227	0	1	1.9	-0.7	227	0	4	2	9.3	1.5
SAB	85	0	4	1.9	-0.1	85	0	6	1	9.7	0.4
SAS	1359	0	1	1.9	-0.4	1350	0	2	1	7.4	0.7
SIA	1356	1	1	1.8	-0.5	1351	0	3	1	9.4	1.0
SOL	39	3	3	0.9	0.1	38	0	11	5	9.5	0.3
SPP	349	0	2	1.9	-0.2	343	0	2	0	8.7	0.7
SVA	136	1	4	1.7	-0.1	141	0	4	1	8.5	0.5
SWR	184	0	1	1.9	0.1	186	0	0	0	6.5	1.0
TAP	700	1	3	2.0	-0.1	698	0	3	0	9.6	1.2
TEJ	34	0	12	2.2	0.6	38	0	13	0	9.3	1.0
THA	359	4	5	1.9	-0.5	345	1	4	1	8.9	0.4
TIH	144	3	3	1.7	0.0	145	0	5	0	8.9	2.0
TOW	59	2	10	2.7	0.7	60	0	85	2	8.5	1.2
TSC	74	0	3	2.2	-0.7	79	0	6	0	8.5	2.2
TWA	1427	1	2	2.0	0.3	1434	0	3	0	8.9	0.9

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
UAL	81314	1	4	1.5	0.2	81393	0	4	0	7.3	0.9
ULE	104	0	0	1.2	-0.1	105	0	2	0	8.5	1.2
UPS	695	2	6	2.0	-0.3	712	0	5	0	8.6	1.3
USA	178	0	3	1.8	-0.4	181	0	3	0	8.1	1.7
USF	99	1	11	1.3	-0.2	100	0	9	0	7.9	2.1
VIA	578	1	4	1.6	0.6	580	0	4	1	8.0	2.0
VIR	204	0	2	2.0	-0.6	208	0	2	0	7.9	1.8
VRG	50	6	8	1.9	0.8	49	0	2	0	10.3	2.4
VSP	102	2	2	2.1	0.3	102	0	1	0	10.1	2.2
WOA	30	3	0	1.4	0.6	31	0	0	0	6.3	0.1

IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AN	26948	0	2	1.7	0.1	26718	0	1	0	6.6	0.9
BA	18867	0	8	1.5	0.4	18841	0	8	0	7.2	1.5
DL	803	0	94	2.9	0.4	803	28	99	0	42.7	0.0
FJ	23	0	0	1.5	1.0	23	0	0	0	7.0	-0.5
KL	1945	1	1	1.2	0.1	1945	0	25	0	8.0	1.5
LH	409	0	3	1.6	0.8	408	0	97	0	7.9	2.2
NW	48440	0	1	1.5	0.3	48440	0	1	0	6.7	1.0
QF	12517	0	1	1.4	0.2	12488	0	1	0	6.4	1.1

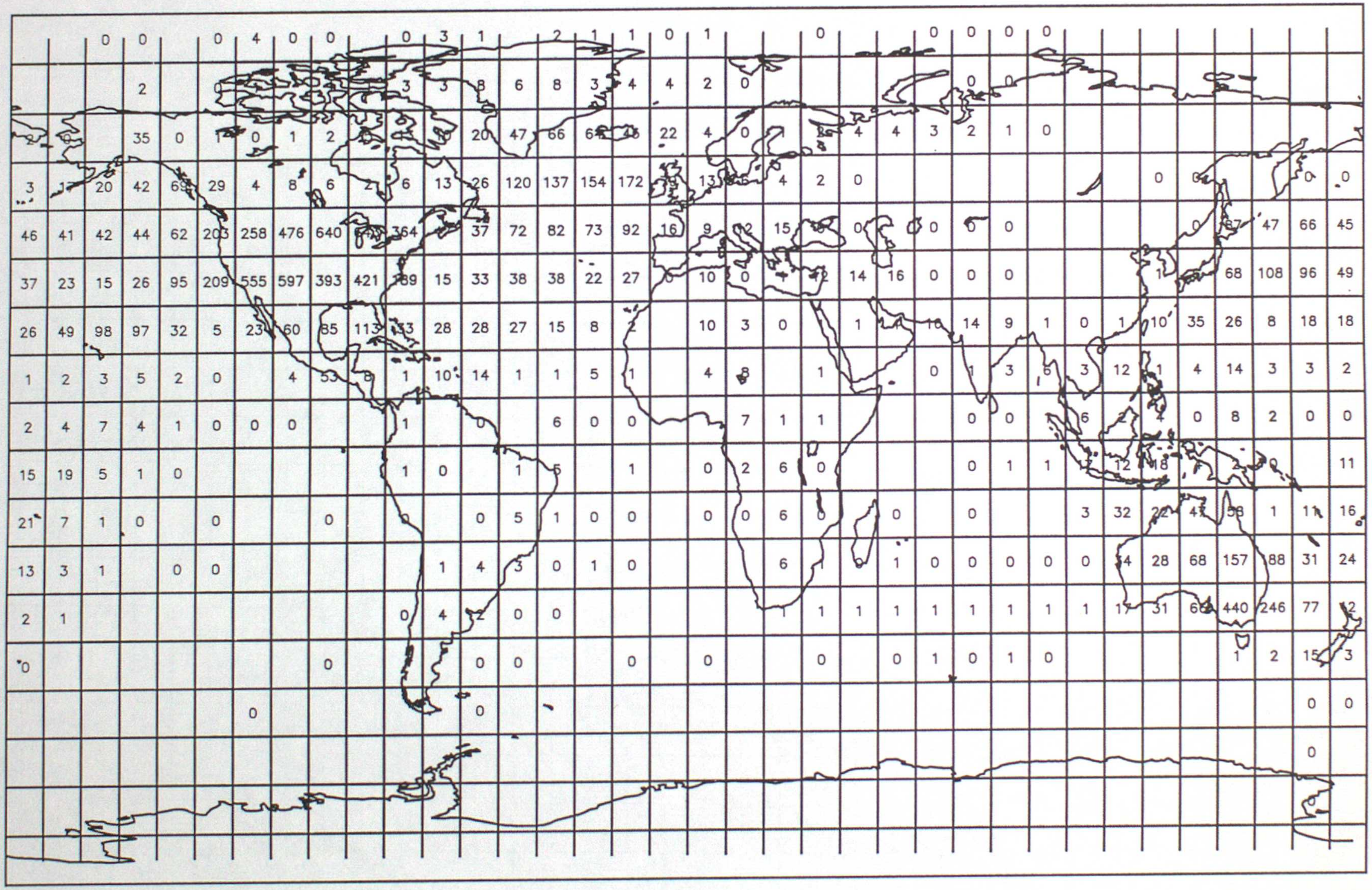
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
M	278	4	12	3.1	0.7	285	0	10	0	13.4	2.9
N	476	3	4	2.5	0.6	504	0	3	0	9.0	1.0

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA

FIGURE 3

OCTOBER 1994

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED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2 3 3 8 6 8 3 4 4 2 0 0 0
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3 20 42 29 4 8 6 6 13 26 120 137 154 172 13 4 2 0 0 0 0
46 41 42 44 62 258 476 640 364 37 72 82 73 92 16 9 15 0 0 0 0 47 66 45
37 23 15 26 95 209 555 597 393 421 15 33 38 38 22 27 10 0 14 16 0 0 0 1 68 108 96 49
26 49 98 97 32 5 60 85 113 28 28 27 15 8 2 10 3 0 1 14 9 1 0 1 10 35 26 8 18 18
1 2 3 5 2 0 4 53 1 10 14 1 1 5 1 4 8 1 0 1 3 3 12 1 4 14 3 3 2
2 4 7 4 1 0 0 0 1 6 0 0 7 1 1 0 0 6 4 0 8 2 0 0
15 19 5 1 0 1 0 1 1 0 2 6 0 0 1 1 12 18 11
21 7 1 0 0 0 0 5 1 0 0 0 0 6 0 0 3 32 47 1 16
13 3 1 0 0 1 4 0 1 0 6 1 0 0 0 0 0 28 68 157 31 24
2 1 0 4 0 0 1 1 1 1 1 1 1 1 31 440 246 77
0 0 0 0 0 0 0 0 1 0 1 0 1 2 3
0 0 0 0
0

AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA

FIGURE 4

OCTOBER 1994

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

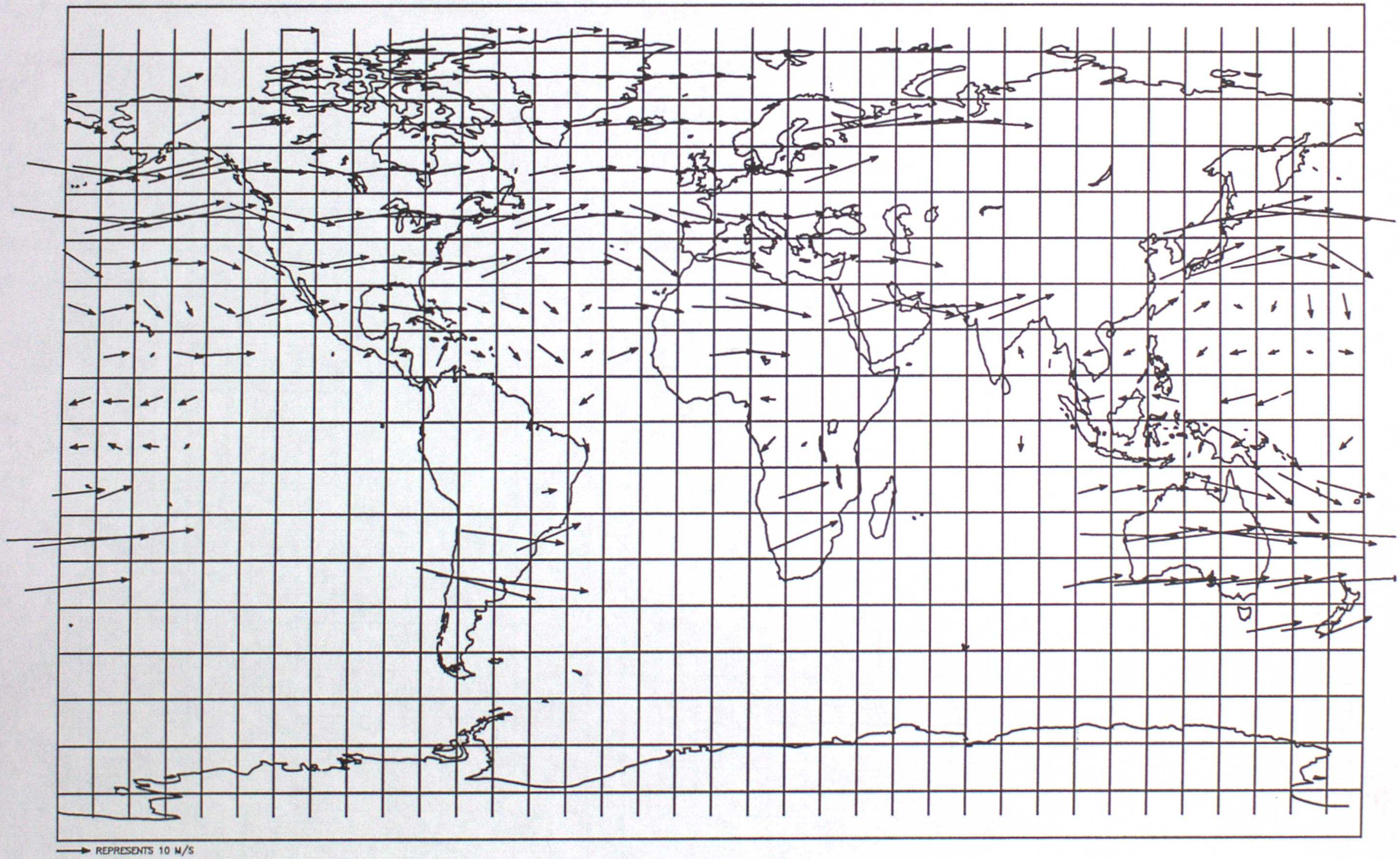
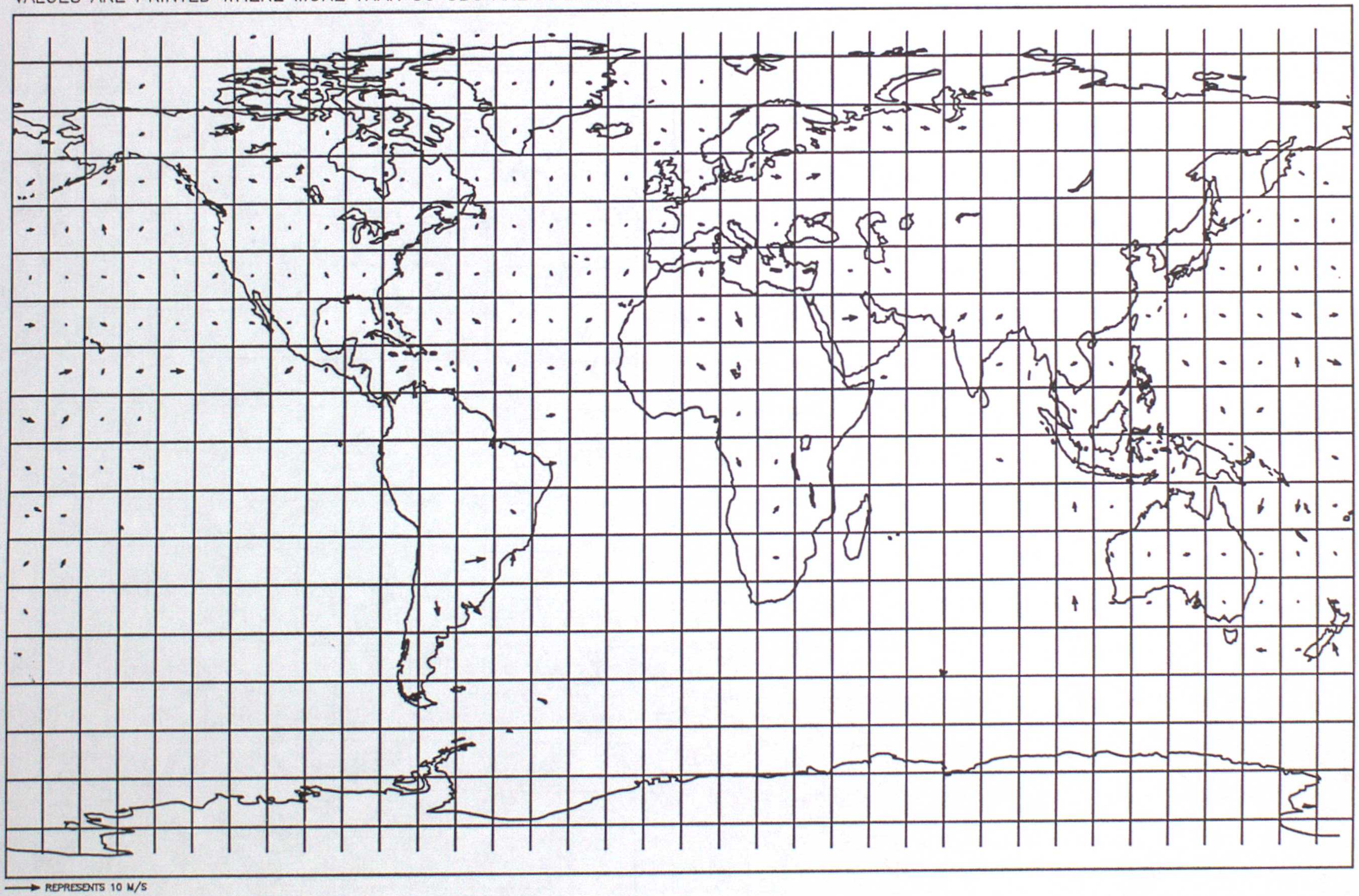
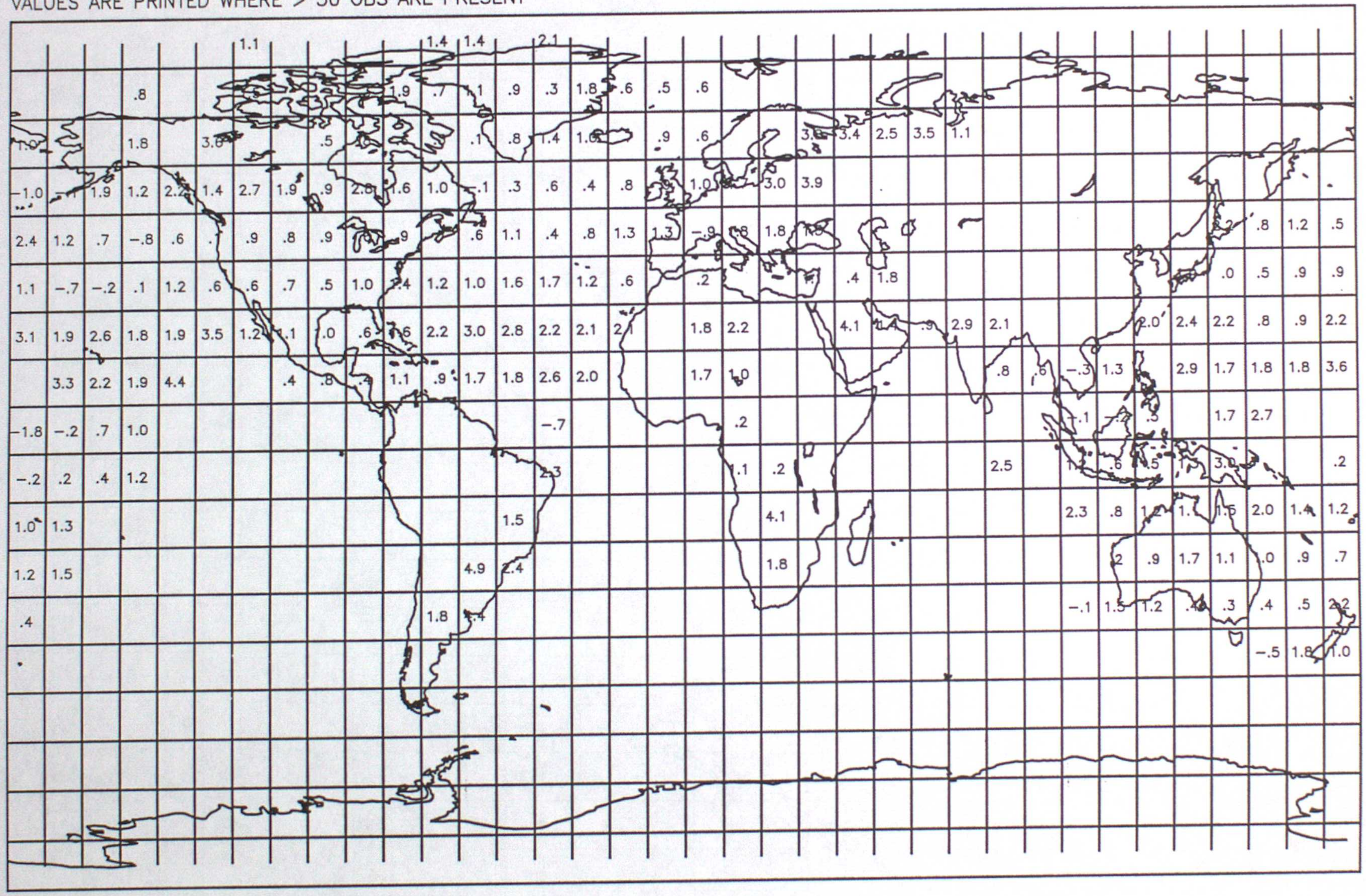


FIGURE 5

AIRCRAFT MEAN O–B WINDS BETWEEN 70 AND 500 HPA
OCTOBER 1994
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O-B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
OCTOBER 1994
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

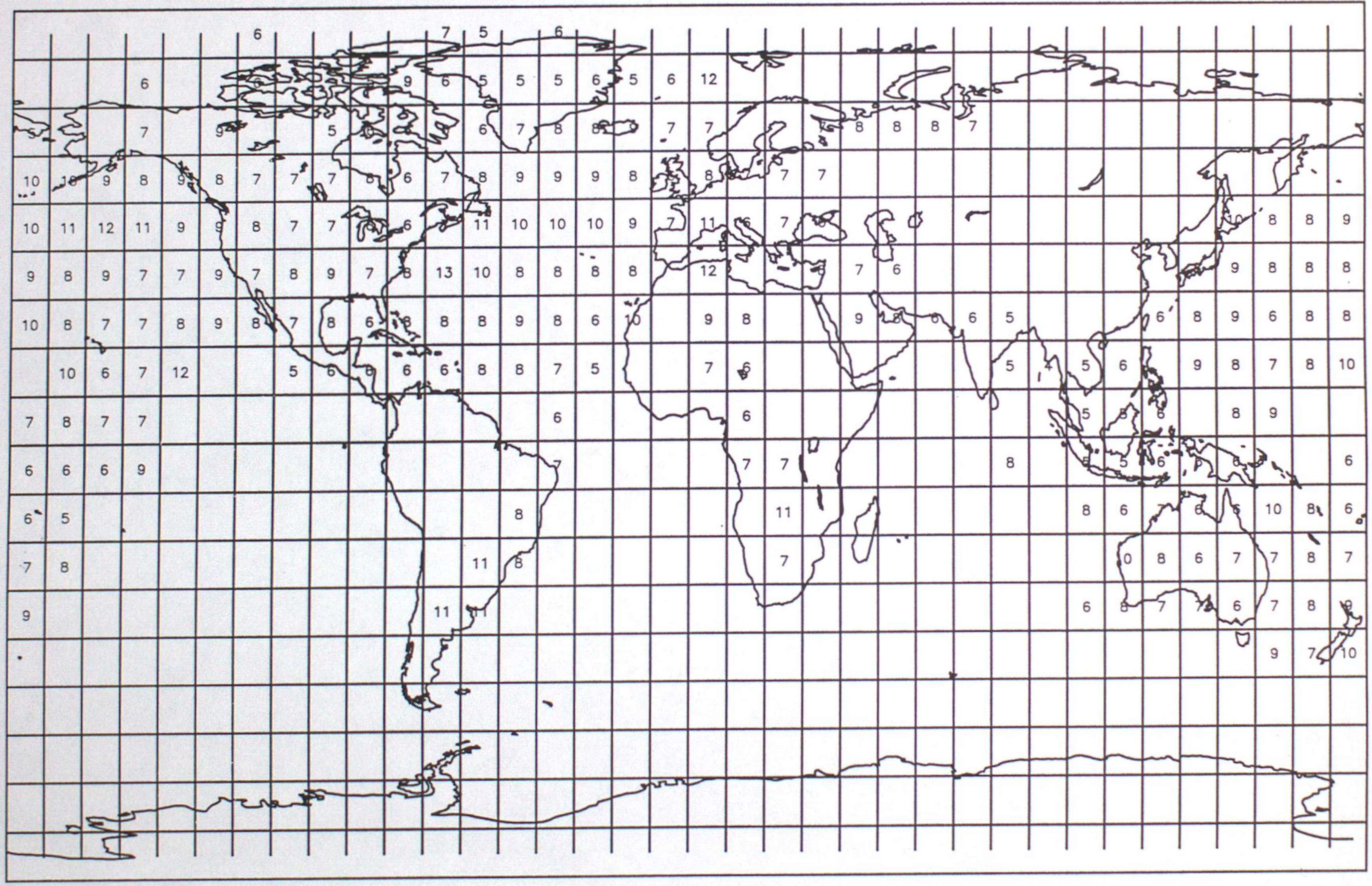

1.1 1.4 1.4 2.1
.8 1.9 .7 .1 .9 .3 1.8 .6 .5 .6
1.0 1.8 3.6 .5 .1 .8 1.4 1.6 .9 .6 3.8 3.4 2.5 3.5 1.1
-1.0 -.1 1.9 1.2 2.2 1.4 2.7 1.9 .9 2.8 1.6 1.0 -.1 .3 .6 .4 .8 .9 1.0 .8 3.0 3.9
2.4 1.2 .7 -.8 .6 .1 .9 .8 .9 .9 .6 1.1 .4 .8 1.3 1.3 -.9 .8 1.8 1.5 3.2 .8 1.2 .5
1.1 -.7 -.2 .1 1.2 .6 .6 .7 .5 1.0 1.4 1.2 1.0 1.6 1.7 1.2 .6 .2 1.1 .4 1.8 .0 .5 .9 .9
3.1 1.9 2.6 1.8 1.9 3.5 1.2 1.1 1.0 .6 1.6 2.2 3.0 2.8 2.2 2.1 2.1 1.8 2.2 4.1 1.4 .9 2.9 2.1 2.0 2.4 2.2 .8 .9 2.2
3.3 2.2 1.9 4.4 .4 .8 .4 1.1 .9 1.7 1.8 2.6 2.0 1.7 1.0 .8 .6 -.3 1.3 2.9 1.7 1.8 1.8 3.6
-1.8 -.2 .7 1.0 -.7 .2 -.1 -.2 .5 1.7 2.7
-.2 .2 .4 1.2 2.3 1.1 .2 2.5 1.1 .6 .5 1.5 3.0 .2
1.0 1.3 1.5 4.1 2.3 .8 1.2 1.1 1.5 2.0 1.4 1.2
1.2 1.5 4.9 2.4 1.8 .2 .9 1.7 1.1 .0 .9 .7
.4 1.8 1.4 -.1 1.5 1.2 .4 .3 .4 .5 2.2
-.5 1.8 1.0

AIRCRAFT : RMS O-B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7

OCTOBER 1994

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT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6 6 9 6 5 5 5 6 5 6 12
5 7 9 5 6 7 8 8 7 7 7 8 8 8 7
10 10 9 8 9 8 7 7 7 8 6 7 8 9 9 9 8 8 8 7 7
10 11 12 11 9 9 8 7 7 6 11 10 10 10 9 7 11 6 7 10 8 8 9
9 8 9 7 7 9 7 8 9 7 8 13 10 8 8 8 8 12 7 6 9 8 8 8
10 8 7 7 8 9 8 7 8 6 8 8 8 9 8 6 10 9 8 9 8 6 6 5 6 8 9 6 8 8
10 6 7 12 5 6 6 6 6 8 8 7 5 7 6 5 4 5 6 9 8 7 8 10
7 8 7 7 6 6 5 8 6 8 9
6 6 6 9 7 7 7 8 6 5 6 6 6 6
6 5 8 11 8 6 6 6 10 8 6
7 8 11 8 7 0 8 6 7 7 8 7
9 11 11 6 8 7 7 6 7 8 9
9 7 10

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 30.0 hPa

Element monitored :GEOPOTENTIAL HEIGHT IN metres

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.1

SELECTION CRITERIA : ≥ 3 levels with ≥ 10 observations and ≥ 100 m weighted RMS.

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
22820	12	Z	50	62/ 34	15	0	56.2	153.2	163.2	5
23418	00	Z	200	65/ 57	25	0	70.6	98.5	121.1	8
23418	12	Z	200	65/ 57	23	1	62.7	115.0	130.9	8
23933	12	Z	200	61/ 69	19	0	73.6	52.4	90.4	4
26477	12	Z	30	56/ 31	16	0	44.6	163.6	169.5	5
37985	00	Z	150	39/ 49	7	3	97.4	91.6	133.7	5
41594	00	Z	400	32/ 73	14	0	68.9	-47.9	84.0	7
42027	00	Z	150	34/ 75	15	0	106.1	-2.0	106.1	4
42027	12	Z	150	34/ 75	11	0	73.0	119.9	140.4	5
42101	00	Z	200	30/ 76	12	1	113.3	15.4	114.3	5
42314	00	Z	50	27/ 95	10	0	219.0	-8.4	219.1	9
42339	00	Z	50	26/ 73	8	2	162.9	212.0	267.4	9
42339	12	Z	70	26/ 73	10	4	182.9	145.0	233.4	7
42361	00	Z	250	26/ 78	15	1	64.5	60.3	88.3	4
42361	12	Z	200	26/ 78	13	0	123.2	32.1	127.3	6
42369	00	Z	50	27/ 81	13	2	191.4	60.5	200.7	8
42369	12	Z	100	27/ 81	14	2	144.2	44.5	150.9	7
42379	00	Z	50	27/ 83	17	1	188.1	62.9	198.4	8
42379	12	Z	50	27/ 83	15	2	176.6	99.2	202.5	8
42410	00	Z	30	26/ 92	20	0	199.1	135.6	240.9	7
42410	12	Z	100	26/ 92	21	0	112.7	-70.4	132.9	5
42492	00	Z	50	26/ 85	10	2	142.6	139.7	199.6	7
42492	12	Z	200	26/ 85	22	0	105.3	-13.0	106.1	4
42647	00	Z	150	23/ 73	20	1	97.6	-58.5	113.8	7
42647	12	Z	50	23/ 73	13	3	154.5	211.5	261.9	7
42724	00	Z	150	24/ 91	16	1	139.4	14.4	140.2	9
42724	12	Z	200	24/ 91	11	0	100.6	-59.5	116.9	5
42809	00	Z	30	23/ 88	12	1	80.9	201.6	217.2	4
42971	00	Z	70	20/ 86	24	3	146.2	55.3	156.3	6
42971	12	Z	70	20/ 86	17	2	155.4	43.1	161.3	6
43003	00	Z	150	19/ 73	24	0	82.9	-70.5	108.8	4
43003	12	Z	150	19/ 73	16	0	72.1	81.7	109.0	4
43014	00	Z	250	20/ 75	24	1	96.4	-15.5	97.6	6
43014	12	Z	150	20/ 75	18	1	114.6	0.3	114.6	6
43128	00	Z	30	17/ 78	13	2	213.5	87.8	230.9	8
43128	12	Z	200	17/ 78	26	0	89.3	7.3	89.6	5
43150	00	Z	150	18/ 83	20	1	87.4	42.8	97.3	5
43192	00	Z	50	15/ 74	13	0	166.6	-53.2	174.8	7
43192	12	Z	100	15/ 74	10	0	115.7	-97.2	151.1	4
43285	00	Z	70	13/ 75	16	1	133.8	-189.9	232.3	7
43285	12	Z	50	13/ 75	13	1	207.3	-44.0	211.9	6
43295	00	Z	30	13/ 78	8	2	90.8	311.0	324.0	6
43295	12	Z	100	13/ 78	11	3	71.5	158.9	174.3	5
43311	12	Z	200	11/ 73	12	1	106.3	19.0	108.0	5
43346	00	Z	50	11/ 80	14	2	152.1	-13.9	152.7	5
43346	12	Z	50	11/ 80	17	0	163.3	54.6	172.2	4
43353	00	Z	100	10/ 76	14	1	122.3	-112.4	166.1	5
43353	12	Z	100	10/ 76	12	1	103.5	-113.7	153.7	5
43369	00	Z	50	8/ 73	19	0	151.2	-157.1	218.1	8
43369	12	Z	100	8/ 73	15	1	115.1	-103.4	154.7	7
43371	00	Z	200	8/ 77	19	3	112.2	-55.1	125.0	10
43371	12	Z	70	8/ 77	23	2	161.1	37.6	165.4	8
44231	00	Z	250	50/ 100	14	0	48.2	69.5	84.6	5
44373	12	Z	200	44/ 104	6	5	85.0	192.2	210.1	5
54135	00	Z	200	44/ 122	28	0	65.0	70.0	95.5	9
54135	12	Z	70	44/ 122	25	2	97.8	109.4	146.7	7
54161	00	Z	70	44/ 125	26	1	67.9	116.8	135.1	5
54161	12	Z	70	44/ 125	24	0	96.1	122.0	155.3	5
56739	00	Z	100	25/ 98	29	1	36.8	118.5	124.1	4
56739	12	Z	100	25/ 98	31	0	43.9	136.5	143.4	4

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
57679	00	Z	100	28/ 113	29	0	45.0	104.1	113.5	4
57957	00	Z	100	25/ 110	29	0	42.6	127.8	134.7	4
57957	12	Z	100	25/ 110	31	0	34.3	131.4	135.8	6
58847	00	Z	100	26/ 119	29	0	54.6	132.3	143.1	6
58847	12	Z	70	26/ 119	26	0	60.0	142.3	154.4	4
60360	12	Z	150	37/ 8	3	8	13.1	-228.0	228.4	4
62306	00	Z	70	31/ 27	15	0	58.3	163.1	173.2	5
62306	12	Z	70	31/ 27	4	7	74.0	266.7	276.8	9
62378	12	Z	50	30/ 31	12	3	67.5	300.8	308.3	6
62414	12	Z	200	24/ 33	14	0	65.7	-49.6	82.3	6
63450	12	Z	700	9/ 39	27	0	15.6	36.8	40.0	4
82332	12	Z	30	-3/ -60	18	0	76.1	197.2	211.3	5
83208	12	Z	30	-13/ -60	14	0	61.7	214.6	223.3	4
89009	00	Z	300	-90/ 0	21	0	55.6	43.5	70.6	5
89592	12	Z	30	-67/ 93	14	0	114.8	192.6	224.2	7
89664	00	Z	300	-78/ 167	19	0	67.3	34.7	75.7	7
91557	12	Z	700	-18/ 168	20	1	9.5	-84.7	85.2	6
96163	00	Z	70	-1/ 100	11	0	135.9	145.3	199.0	6
96237	00	Z	100	-2/ 106	19	0	132.8	21.6	134.6	8
97014	00	Z	150	2/ 125	28	0	71.4	-62.2	94.7	4

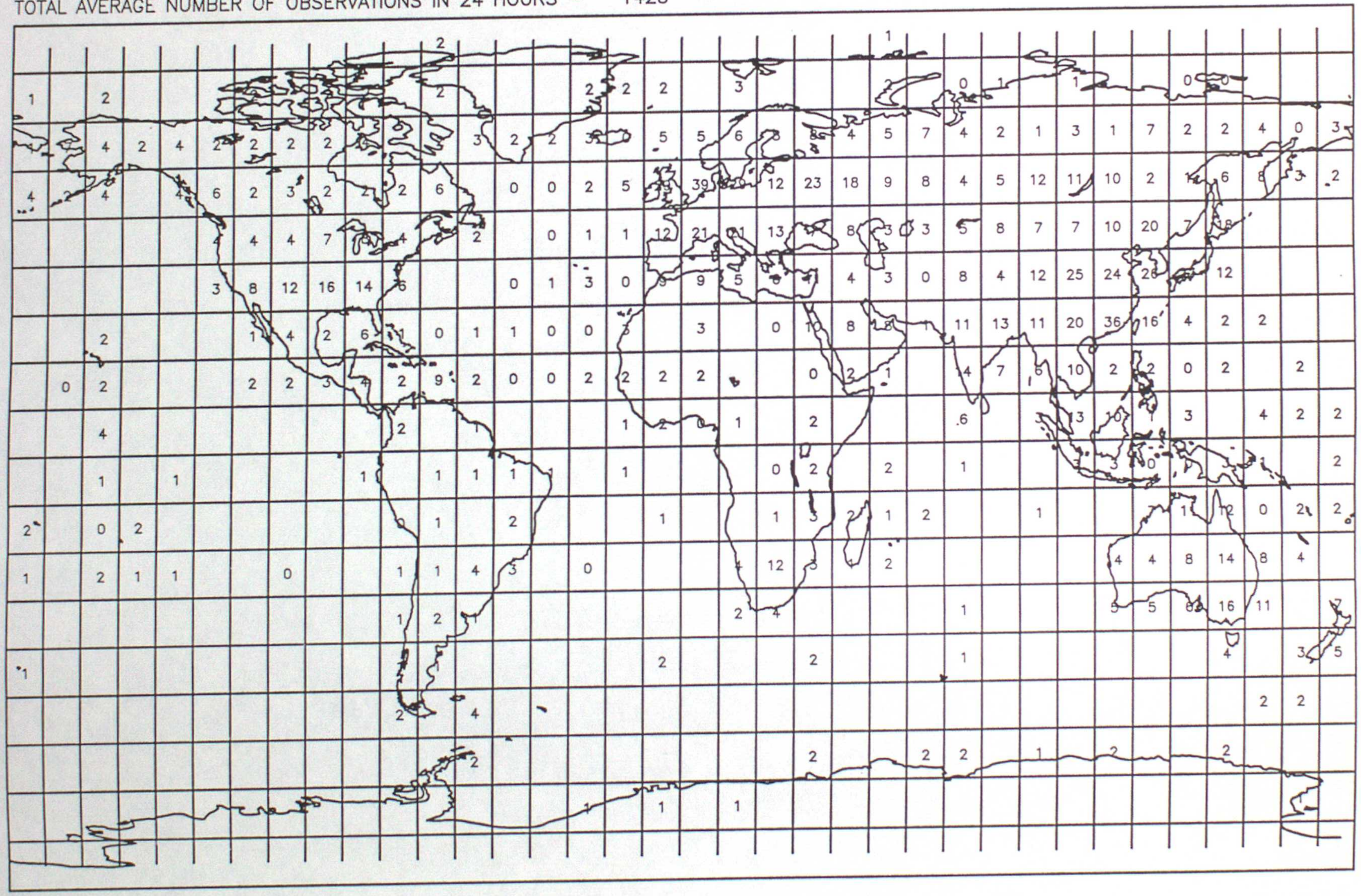
AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – OCTOBER 1994

FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1423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4 4 7 4 2 0 1 1 12 21 21 13 8 3 3 5 8 7 7 10 20 7 8
3 8 12 16 14 6 0 1 3 0 9 9 5 8 4 3 0 8 4 12 25 24 26 12
2 1 4 2 6 1 0 1 1 0 0 3 3 0 10 8 8 11 13 11 20 36 16 4 2 2
0 2 2 2 3 4 2 9 2 0 0 2 2 2 2 0 2 1 4 7 6 10 2 2 0 2 2
4 2 1 1 2 1 2 .6 13 10 1 3 4 2 2
1 1 1 1 1 1 1 1 0 2 2 1 3 0 2
2 0 2 1 2 1 1 3 2 1 2 1 1 2 0 2 2
1 2 1 1 0 1 1 4 3 0 4 12 3 1 2 4 4 8 14 8 4
1 2 1 2 4 1 5 5 6 16 11 7
1 2 2 1 4 3 5
2 4 2 2
2 2 2 2 1 2 2
1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

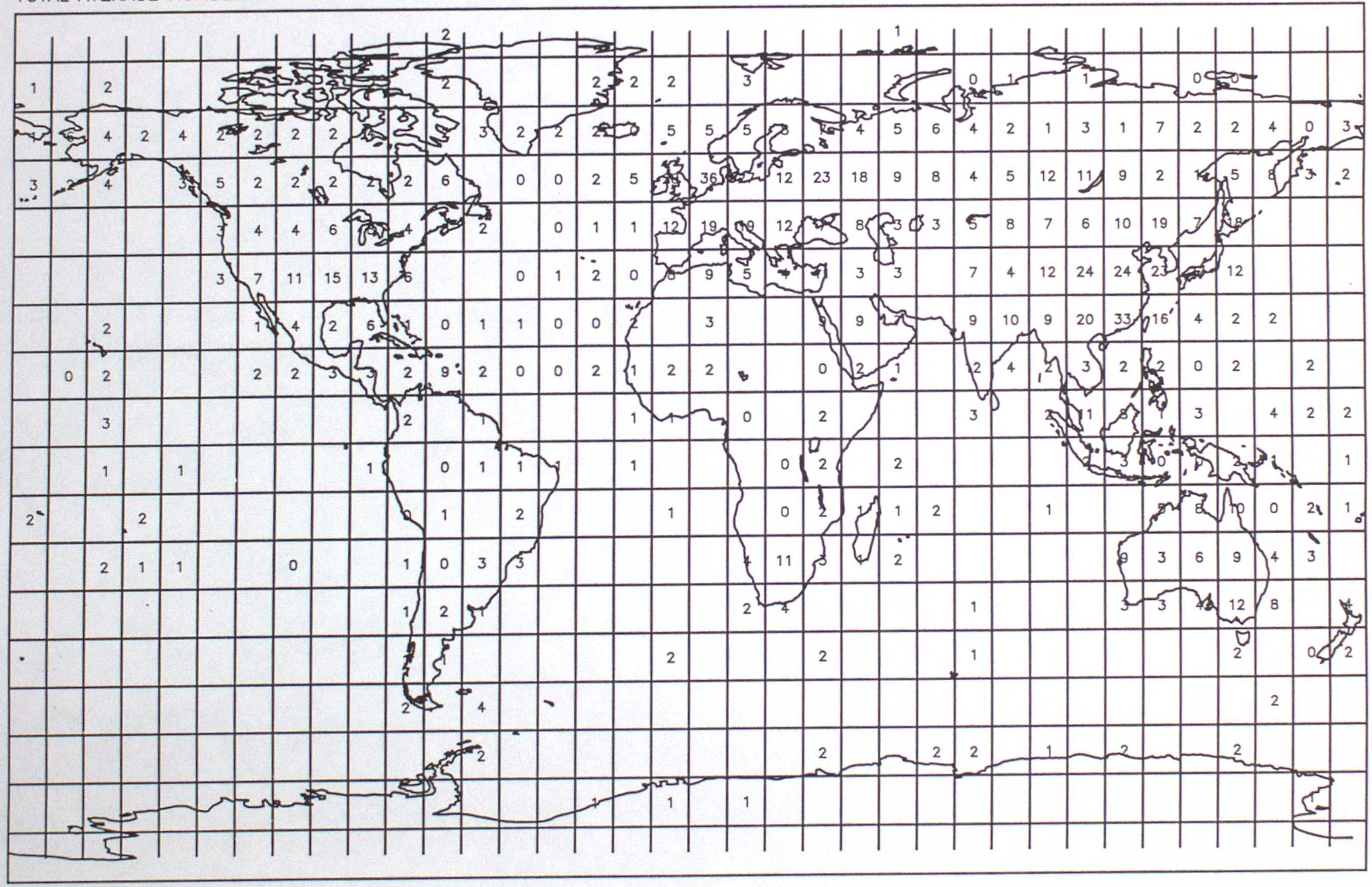
```
  WMO  OBS                                NUM    NUM      %
IDENT TIME ELM   LEV    LAT/LONG  OBS   GROSS   REJ  UBIAS   VBIAS    RMS    LEVELS

41530  00    V   200     34/  72   11      0     18    4.4     1.2    17.7      2
42101  00    V   200     30/  76   11      0      9    4.2    -0.2    17.3      1
43333  12    V   200     12/  93   10      0     10   -2.9     3.2    15.5      1
```

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – OCTOBER 1994

FIGURE 9

ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1270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1 4 2 4 2 2 2 2 2 3 2 2 2 5 5 5 8 7 4 5 6 4 2 1 3 1 7 2 2 4 0 3
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3 4 4 6 4 2 0 1 1 12 19 19 12 7 8 3 3 5 8 7 6 10 19 7 18
3 7 11 15 13 6 0 1 2 0 6 9 5 1 3 3 7 4 12 24 24 23 12
2 1 4 2 6 1 0 1 1 0 0 2 3 9 9 7 9 10 9 20 33 16 4 2 2
0 2 2 2 3 3 2 9 2 0 0 2 1 2 2 0 2 1 2 4 2 3 2 2 0 2 2
3 2 1 1 1 0 2 3 2 11 8 3 4 2 2
1 1 1 0 1 1 1 1 0 2 2 2 3 0 2 1
2 2 1 1 2 1 0 2 1 1 2 1 2 8 10 0 2 1
2 1 1 0 1 0 3 3 4 11 3 1 2 9 3 6 9 4 3
1 2 1 2 4 1 3 3 4 12 8 4
1 2 2 1 2 0 2
2 4 2
2 2 2 2 1 2 2
1 1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for radiosonde TEMPs.
Area monitored	:90°N - 90°S, 180°W - 180°E.
Standard of comparison	:Background field from Bracknell global model.
Observation times	:00 UTC and 12 UTC.
Level(s) monitored	:Standard levels between 500.0 - 150.0 hPa
Element monitored	:WIND DIRECTION in degrees

Parameters monitored

:NUM OBS	:Average number of observations at all levels.
:BIAS	:Mean difference of observations from background values from all levels.
:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
17030	00	DD	41/ 36	25	10.3	9.6	13.6
17280	00	DD	38/ 40	25	-18.4	5.6	13.7
17280	12	DD	38/ 40	27	-11.9	3.6	15.8
24641	00	DD	64/ 122	26	12.7	5.6	9.7
24641	12	DD	64/ 122	25	11.5	2.8	7.6
31873	00	DD	46/ 134	26	10.9	6.0	12.3
31873	12	DD	46/ 134	25	14.8	4.7	11.8
37018	00	DD	44/ 39	26	10.3	4.7	13.6
42339	00	DD	26/ 73	20	10.1	3.5	11.7
42724	00	DD	24/ 91	14	-14.8	5.4	19.1
42724	12	DD	24/ 91	9	-13.0	8.4	15.7
42867	00	DD	21/ 79	18	-12.3	7.2	18.4
48407	00	DD	15/ 105	14	-14.7	3.1	24.1
48568	00	DD	7/ 101	17	18.3	6.5	26.2
53772	00	DD	38/ 113	30	-10.2	3.5	10.0
58606	00	DD	29/ 116	27	-10.7	5.9	10.2
58606	12	DD	29/ 116	29	-13.3	8.3	12.1
83780	00	DD	-24/ -47	16	11.6	5.4	15.5
89512	12	DD	-71/ 12	12	10.8	10.0	21.1
91334	12	DD	7/ 152	18	10.6	5.6	25.3
91517	00	DD	-9/ 160	18	11.5	8.4	27.5

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH:October, 94

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES, METEOSAT, GMS, INSAT.

Standard of comparison :Background field from Bracknell global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer:701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

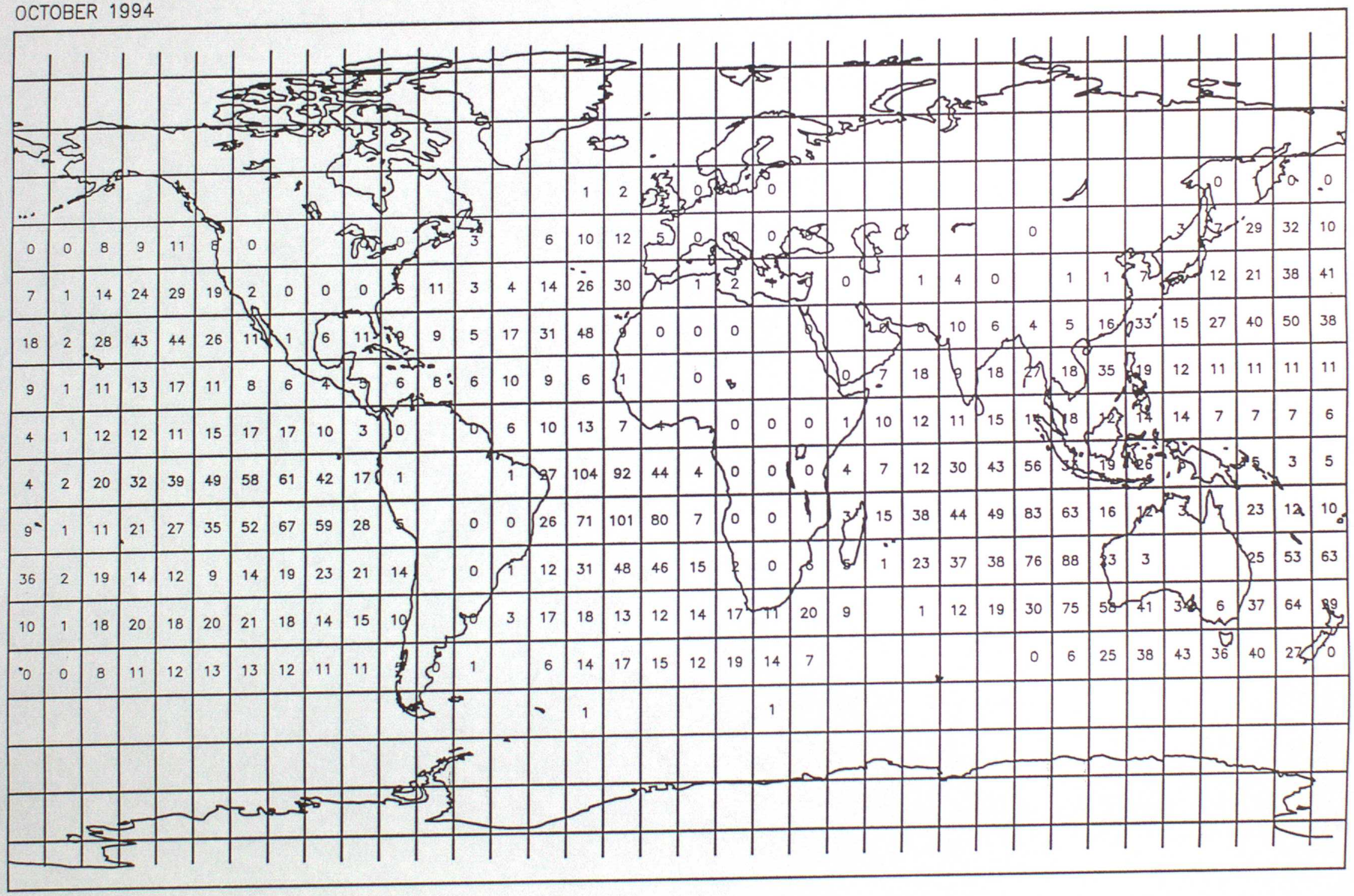
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

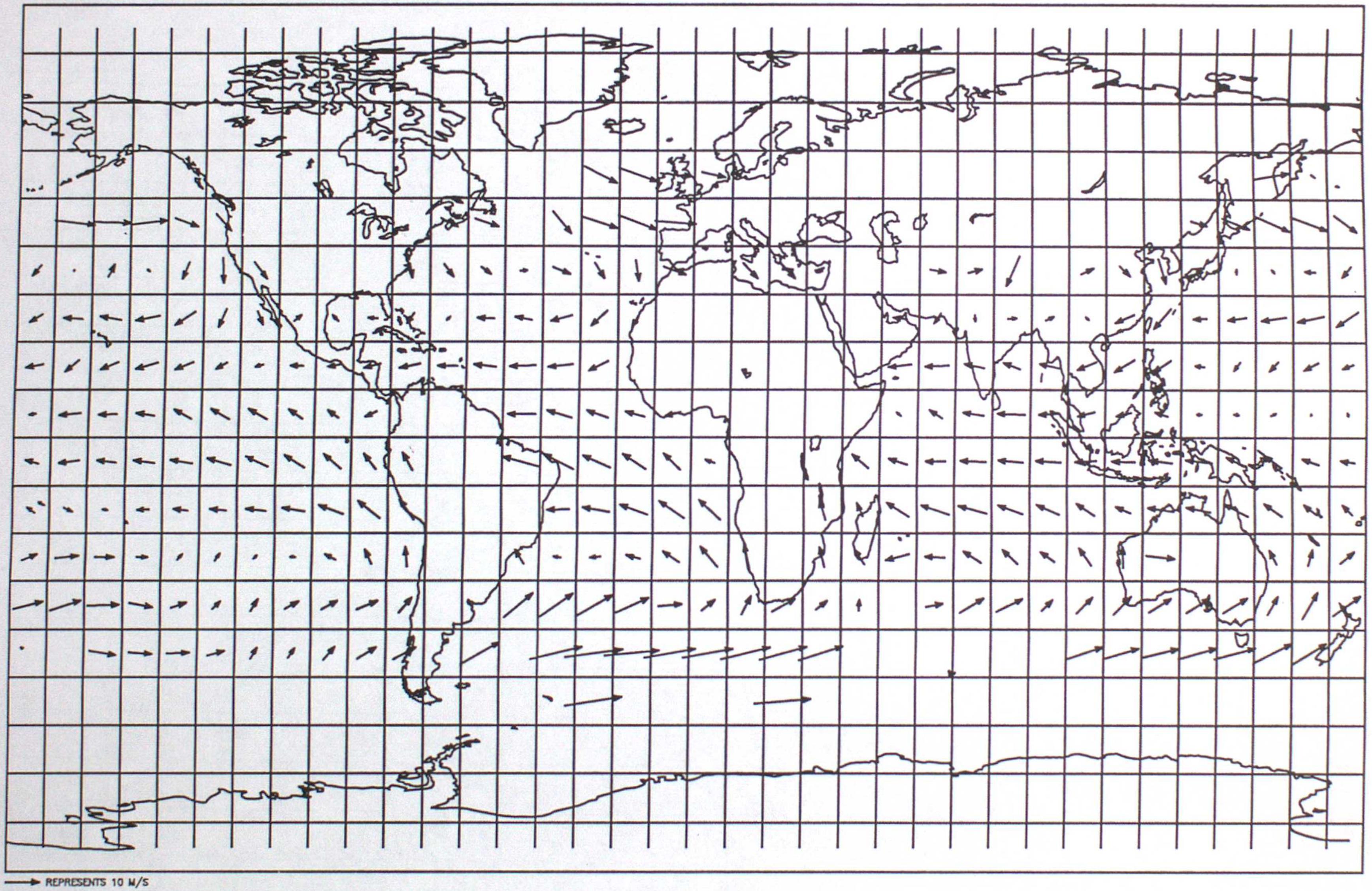
:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
OCTOBER 1994


1 2 0 0 0 0 0
0 0 8 9 11 8 0 0 3 6 10 12 5 0 0 0 0 0 3 7 29 32 10
7 1 14 24 29 19 2 0 0 0 6 11 3 4 14 26 30 1 1 2 0 1 4 0 1 1 7 12 21 38 41
18 2 28 43 44 26 11 1 6 11 9 9 5 17 31 48 9 0 0 0 0 8 8 10 6 4 5 16 33 15 27 40 50 38
9 1 11 13 17 11 8 6 4 5 6 8 6 10 9 6 1 0 0 7 18 9 18 27 18 35 19 12 11 11 11 11
4 1 12 12 11 15 17 17 10 3 0 0 6 10 13 7 4 0 0 0 1 10 12 11 15 15 18 12 14 14 7 7 7 6
4 2 20 32 39 49 58 61 42 17 1 1 27 104 92 44 4 0 0 0 4 7 12 30 43 56 33 19 26 5 3 5
9 1 11 21 27 35 52 67 59 28 5 0 0 26 71 101 80 7 0 0 1 3 15 38 44 49 83 63 16 12 3 23 12 10
36 2 19 14 12 9 14 19 23 21 14 0 1 12 31 48 46 15 2 0 6 5 1 23 37 38 76 88 23 3 25 53 63
10 1 18 20 18 20 21 18 14 15 10 0 3 17 18 13 12 14 17 11 20 9 1 12 19 30 75 58 41 34 6 37 64 39
0 0 8 11 12 13 13 12 11 11 5 0 1 6 14 17 15 12 19 14 7 0 6 25 38 43 36 40 27 0
1 1

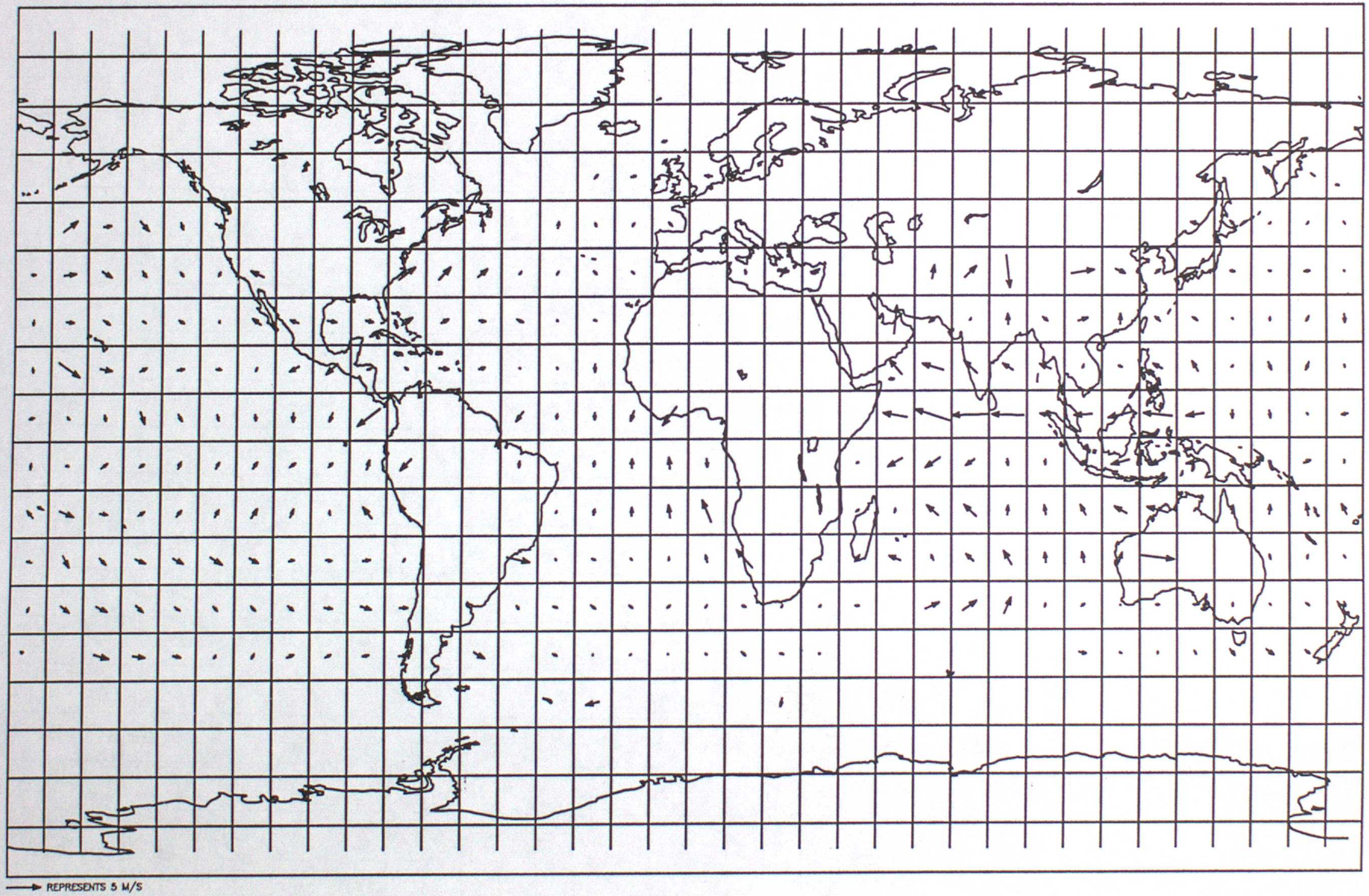
SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA
OCTOBER 1994
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11

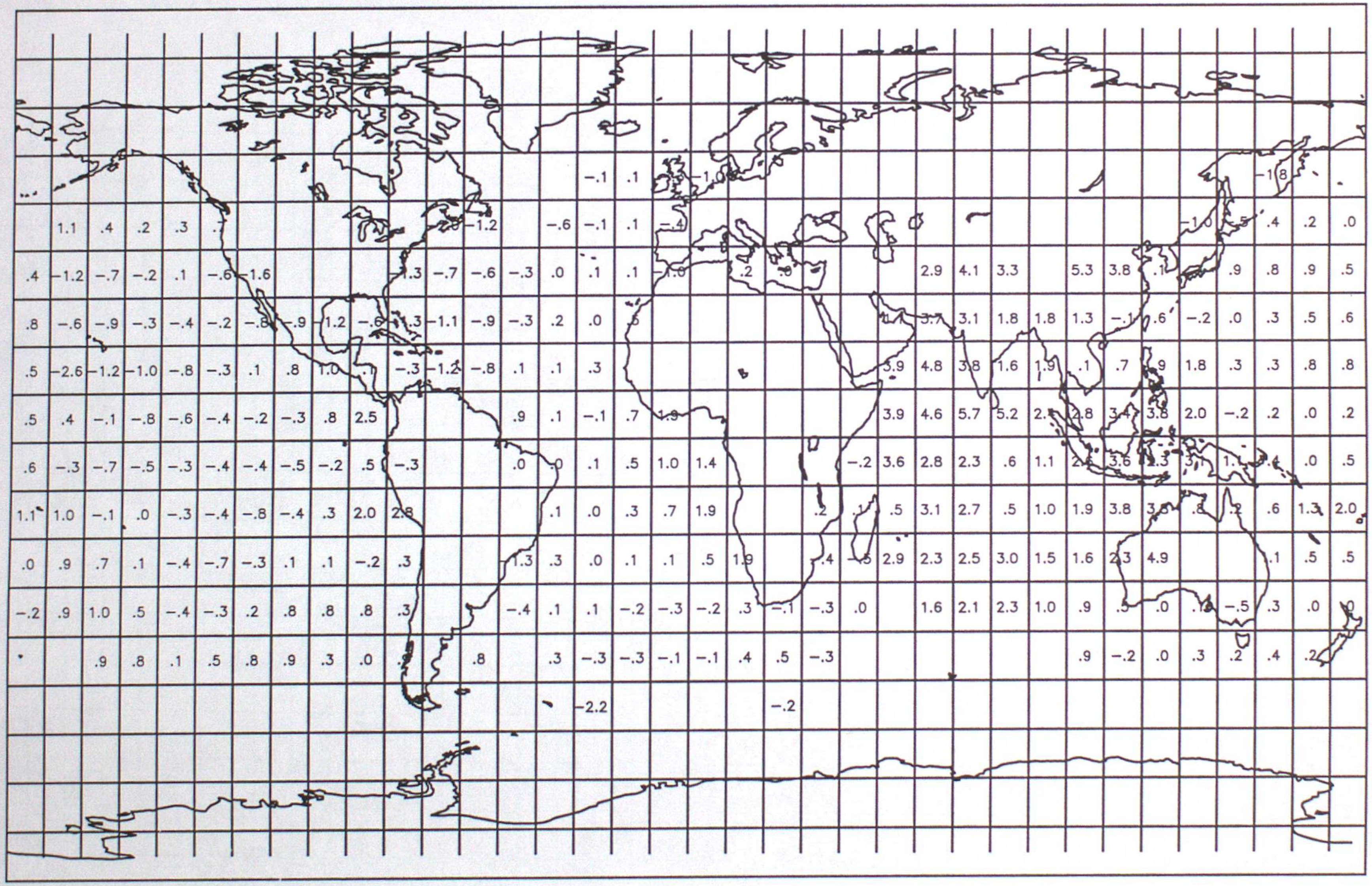

REPRESENTS 10 M/S

SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA
OCTOBER 1994
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

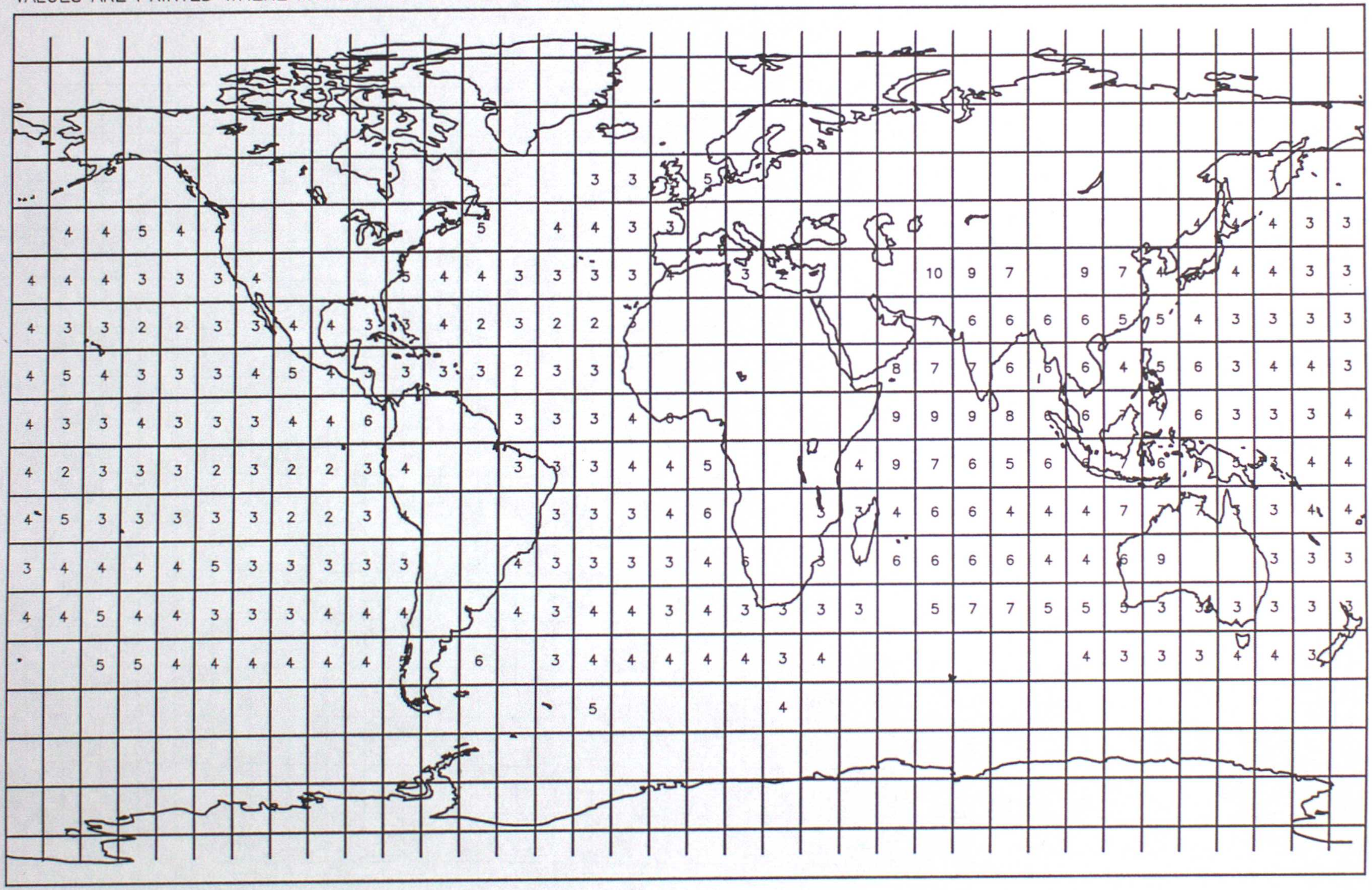
FIGURE 12



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
OCTOBER 1994
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


–.1 .1 –1.0 –1.8
1.1 .4 .2 .3 .7 –1.2 –.6 –.1 .1 –.4 –1.0 –.5 .4 .2 .0
.4 –1.2 –.7 –.2 .1 –.6 –1.6 1.3 –.7 –.6 –.3 .0 .1 .1 –1.0 .2 .0 2.9 4.1 3.3 5.3 3.8 .1 .9 .8 .9 .5
.8 –.6 –.9 –.3 –.4 –.2 –.8 –.9 1.2 –.6 .3 –1.1 –.9 –.3 .2 .0 .5 1.1 3.7 3.1 1.8 1.8 1.3 –.1 .6 –.2 .0 .3 .5 .6
.5 –2.6 –1.2 –1.0 –.8 –.3 .1 .8 1.0 .1 –.3 –1.2 –.8 .1 .1 .3 3.9 4.8 3.8 1.6 1.9 .1 .7 .9 1.8 .3 .3 .8 .8
.5 .4 –.1 –.8 –.6 –.4 –.2 –.3 .8 2.5 .9 .1 –.1 .7 1.9 3.9 4.6 5.7 5.2 2.1 2.8 3.4 3.8 2.0 –.2 .2 .0 .2
.6 –.3 –.7 –.5 –.3 –.4 –.4 –.5 –.2 .5 –.3 .0 .0 .1 .5 1.0 1.4 –.2 3.6 2.8 2.3 .6 1.1 2.6 3.6 2.3 3.1 1.1 .4 .0 .5
1.1 1.0 –.1 .0 –.3 –.4 –.8 –.4 .3 2.0 2.8 .1 .0 .3 .7 1.9 .2 .1 .5 3.1 2.7 .5 1.0 1.9 3.8 3.5 .8 .2 .6 1.3 2.0
.0 .9 .7 .1 –.4 –.7 –.3 .1 .1 –.2 .3 1.3 .3 .0 .1 .1 .5 1.9 .4 –.5 2.9 2.3 2.5 3.0 1.5 1.6 2.3 4.9 .1 .5 .5
–.2 .9 1.0 .5 –.4 –.3 .2 .8 .8 .8 .3 –.4 .1 .1 –.2 –.3 –.2 .3 –.1 –.3 .0 1.6 2.1 2.3 1.0 .9 .5 .0 .1 –.5 .3 .0 .0
.9 .8 .1 .5 .8 .9 .3 .0 .8 .3 –.3 –.3 –.1 –.1 .4 .5 –.3 .9 –.2 .0 .3 .2 .4 .2
–2.2 –.2

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
OCTOBER 1994
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


3 3 5
4 4 5 4 4 5 4 4 3 3 4 4 4 3 3
4 4 4 3 3 3 4 5 4 4 3 3 3 3 4 3 10 9 7 9 7 4 4 4 3 3
4 3 3 2 2 3 3 4 4 3 3 4 2 3 2 2 3 7 6 6 6 6 5 5 4 3 3 3 3
4 5 4 3 3 3 4 5 4 3 3 3 3 2 3 3 8 7 7 6 5 6 4 5 6 3 4 4 3
4 3 3 4 3 3 3 4 4 6 3 3 3 4 6 9 9 9 8 6 6 7 7 6 3 3 3 4
4 2 3 3 3 2 3 2 2 3 4 3 3 3 4 4 5 4 9 7 6 5 6 6 7 6 3 3 4 4
4 5 3 3 3 3 3 2 2 3 3 3 3 4 6 3 3 4 6 6 4 4 4 7 7 7 3 3 4 4
3 4 4 4 4 5 3 3 3 3 3 4 3 3 3 3 4 6 3 4 6 6 6 6 4 4 6 9 3 3 3
4 4 5 4 4 3 3 3 4 4 4 4 3 4 4 3 4 3 3 3 3 5 7 7 5 5 5 3 3 3 3 3 3
5 5 4 4 4 4 4 4 4 6 3 4 4 4 4 4 3 4 4 3 3 3 4 4 3
5 4

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
OCTOBER 1994

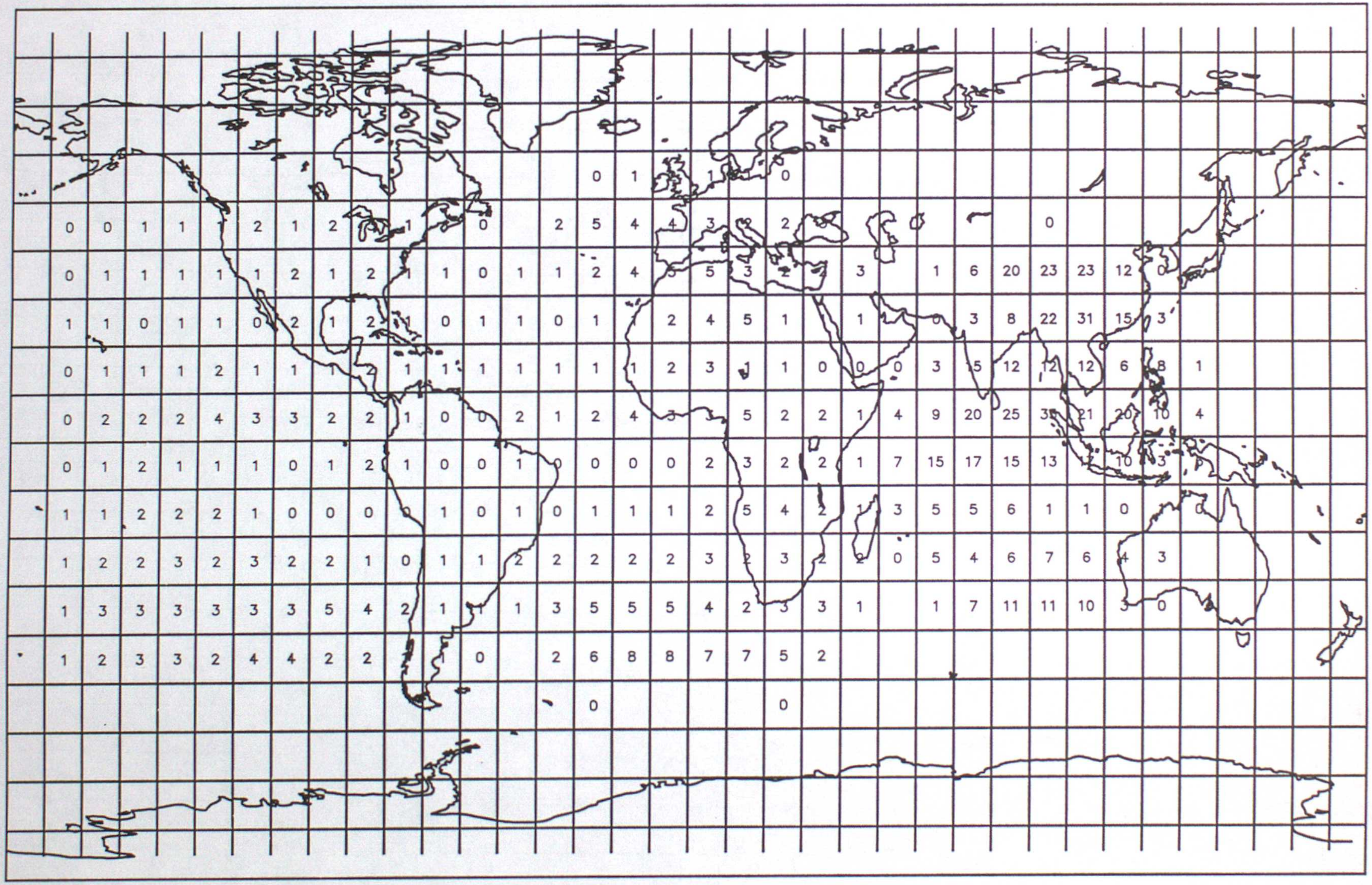

0 1 1 1 0
0 0 1 1 1 2 1 2 1 0 2 5 4 4 3 2 2 0
0 1 1 1 1 1 2 1 2 1 1 0 1 1 2 4 5 5 3 2 2 3 1 6 20 23 23 12 0
1 1 0 1 1 0 2 1 2 1 0 1 1 0 1 1 2 4 5 1 1 0 3 8 22 31 15 3
0 1 1 1 2 1 1 1 2 1 1 1 1 1 1 1 2 3 1 1 0 0 0 3 5 12 12 12 6 8 1
0 2 2 2 4 3 3 2 2 1 0 0 2 1 2 4 3 3 5 2 2 1 4 9 20 25 35 21 20 10 4
0 1 2 1 1 1 0 1 2 1 0 0 1 0 0 0 0 2 3 2 2 1 7 15 17 15 13 12 10 3
1 1 2 2 2 1 0 0 0 0 1 0 1 0 1 1 1 2 5 4 2 1 3 5 5 6 1 1 0 1 0
1 2 2 3 2 3 2 2 1 0 1 1 2 2 2 2 2 3 2 3 2 2 0 5 4 6 7 6 4 3
1 3 3 3 3 3 3 5 4 2 1 1 1 3 5 5 5 4 2 3 3 1 1 7 11 11 10 3 0
1 2 3 3 2 4 4 2 2 1 0 2 6 8 8 7 7 5 2
0 0

FIGURE 16

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
OCTOBER 1994
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

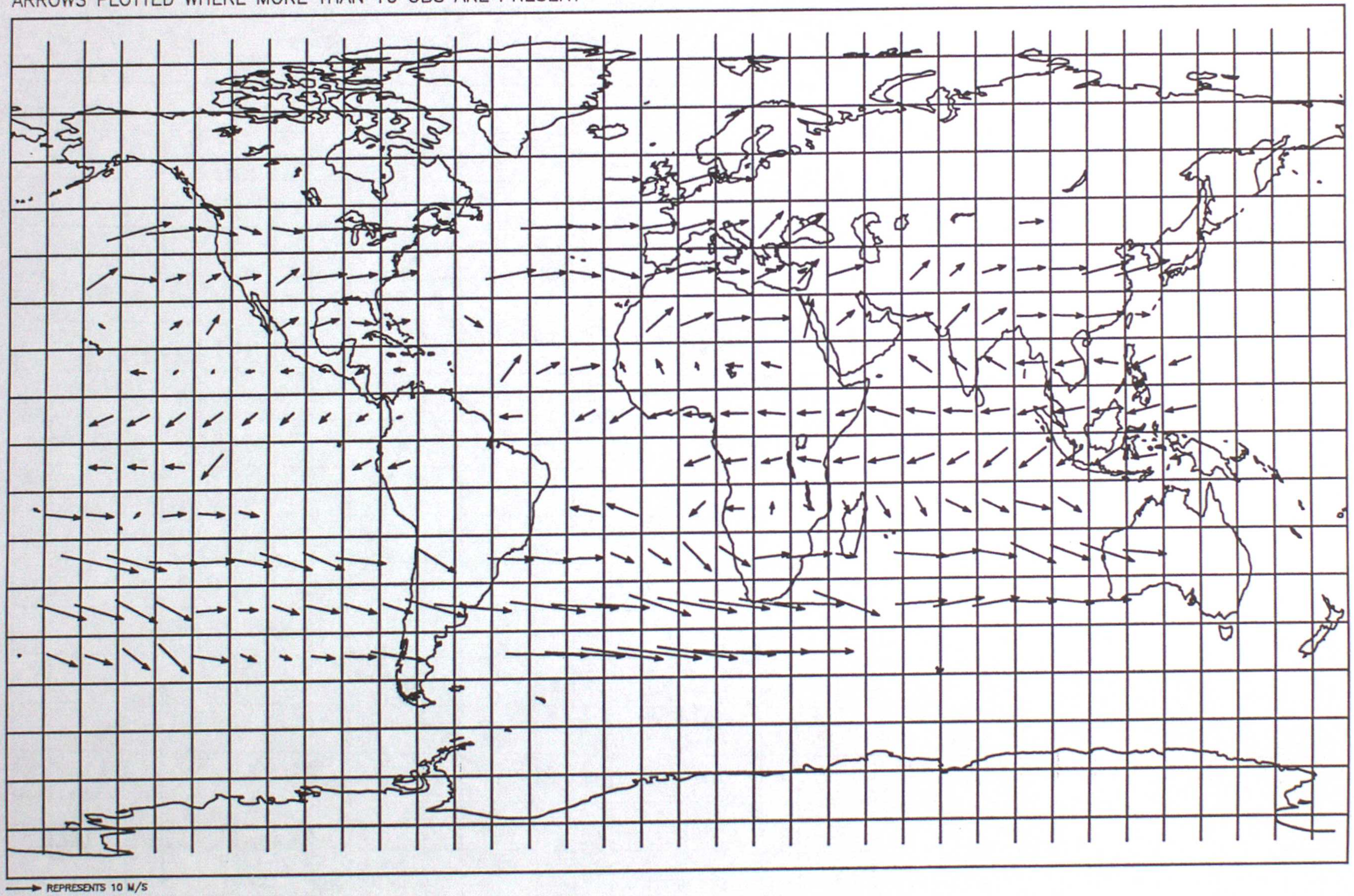
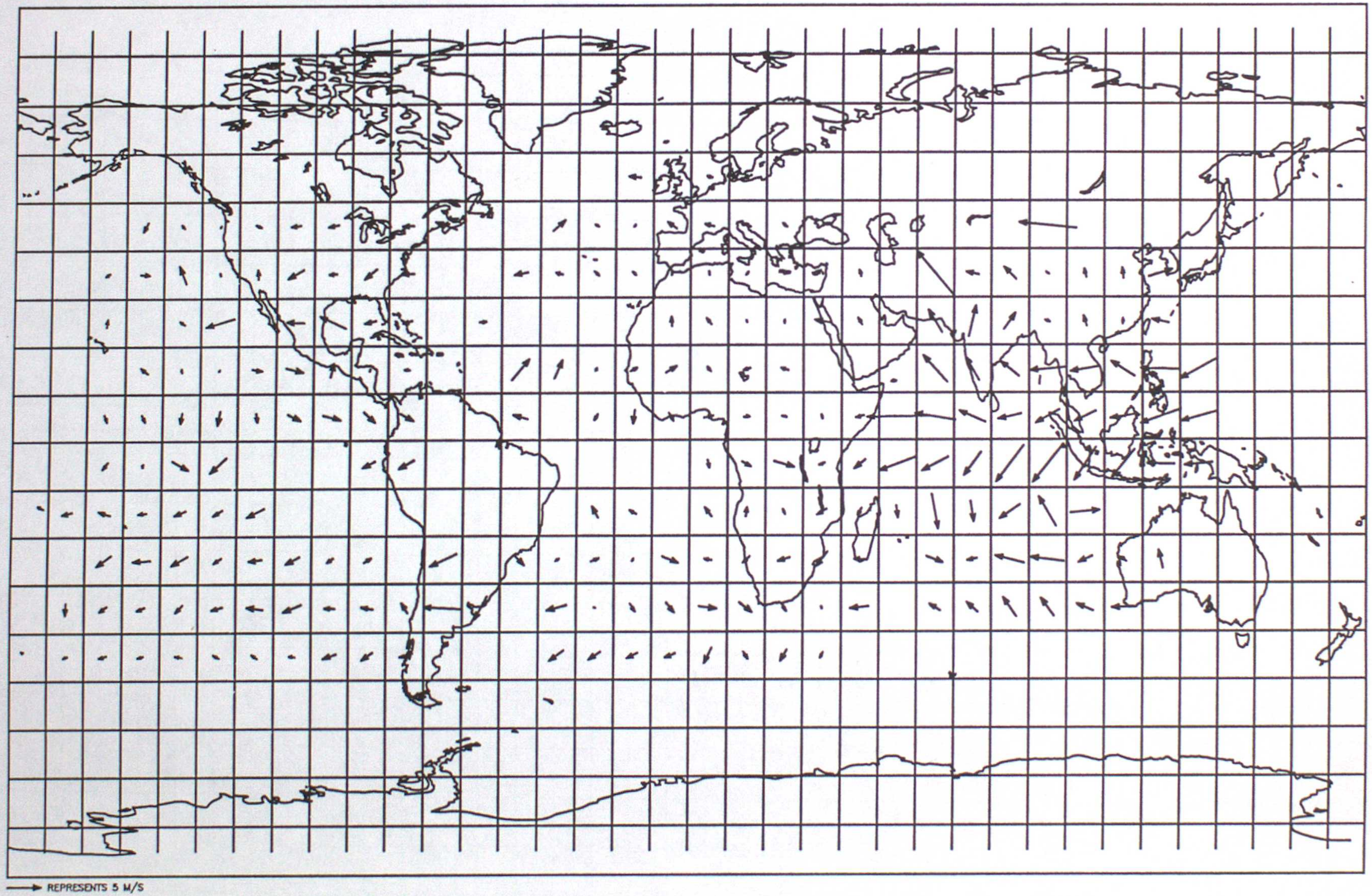
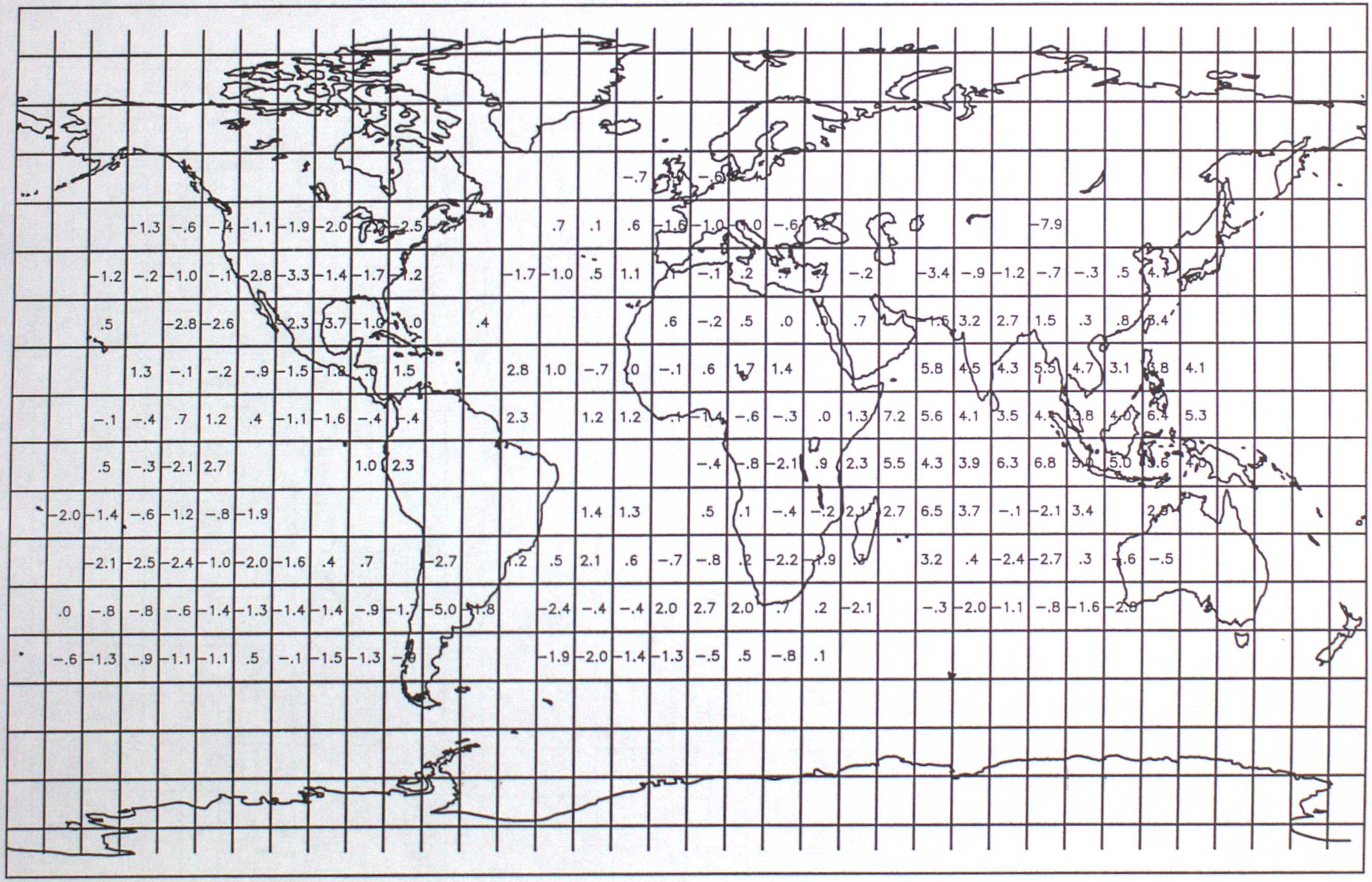

REPRESENTS 10 M/S

FIGURE 17

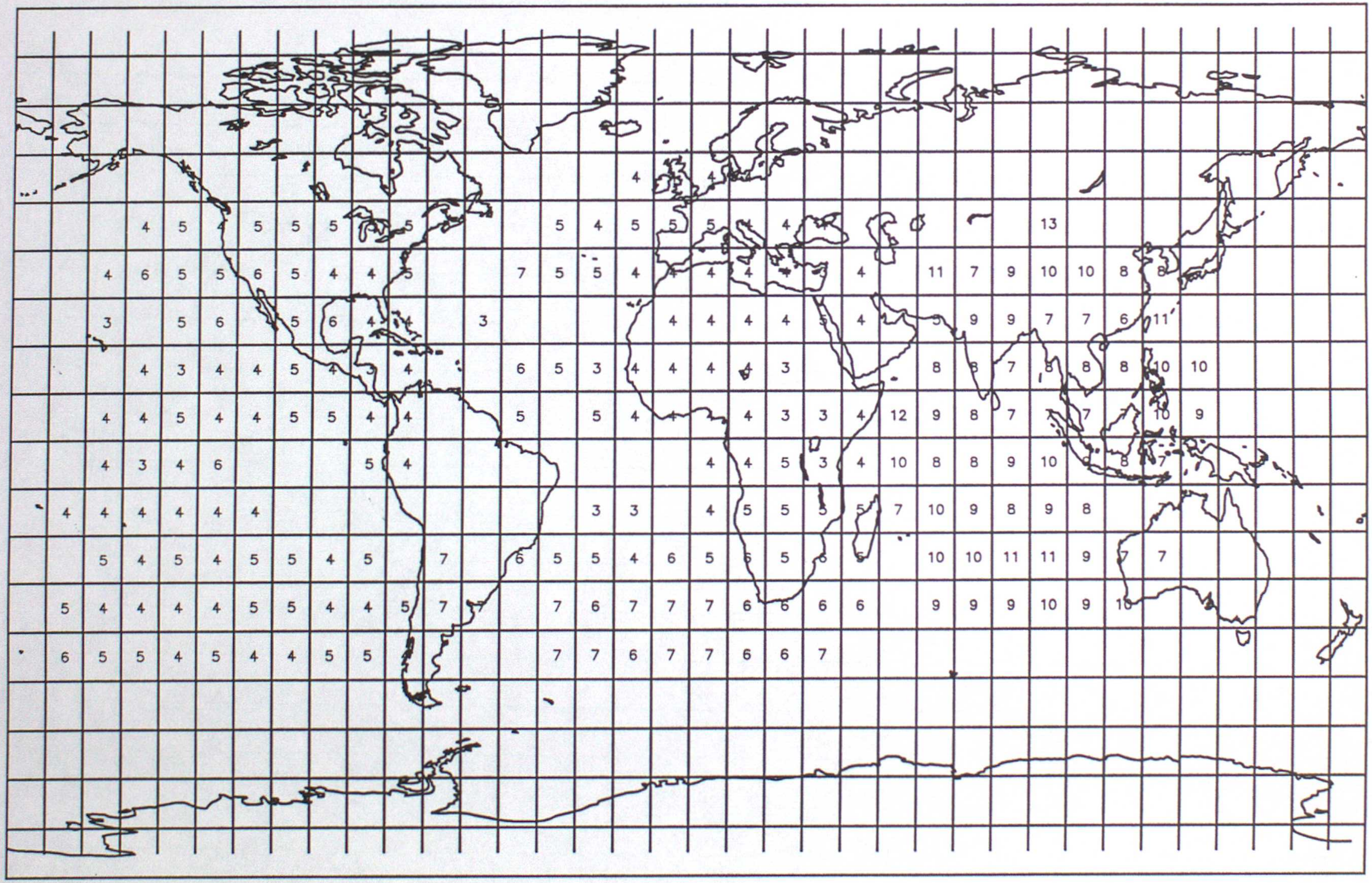
SATOB O−B VECTOR WIND DIFFERENCES BETWEEN 401−700 HPA
OCTOBER 1994
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



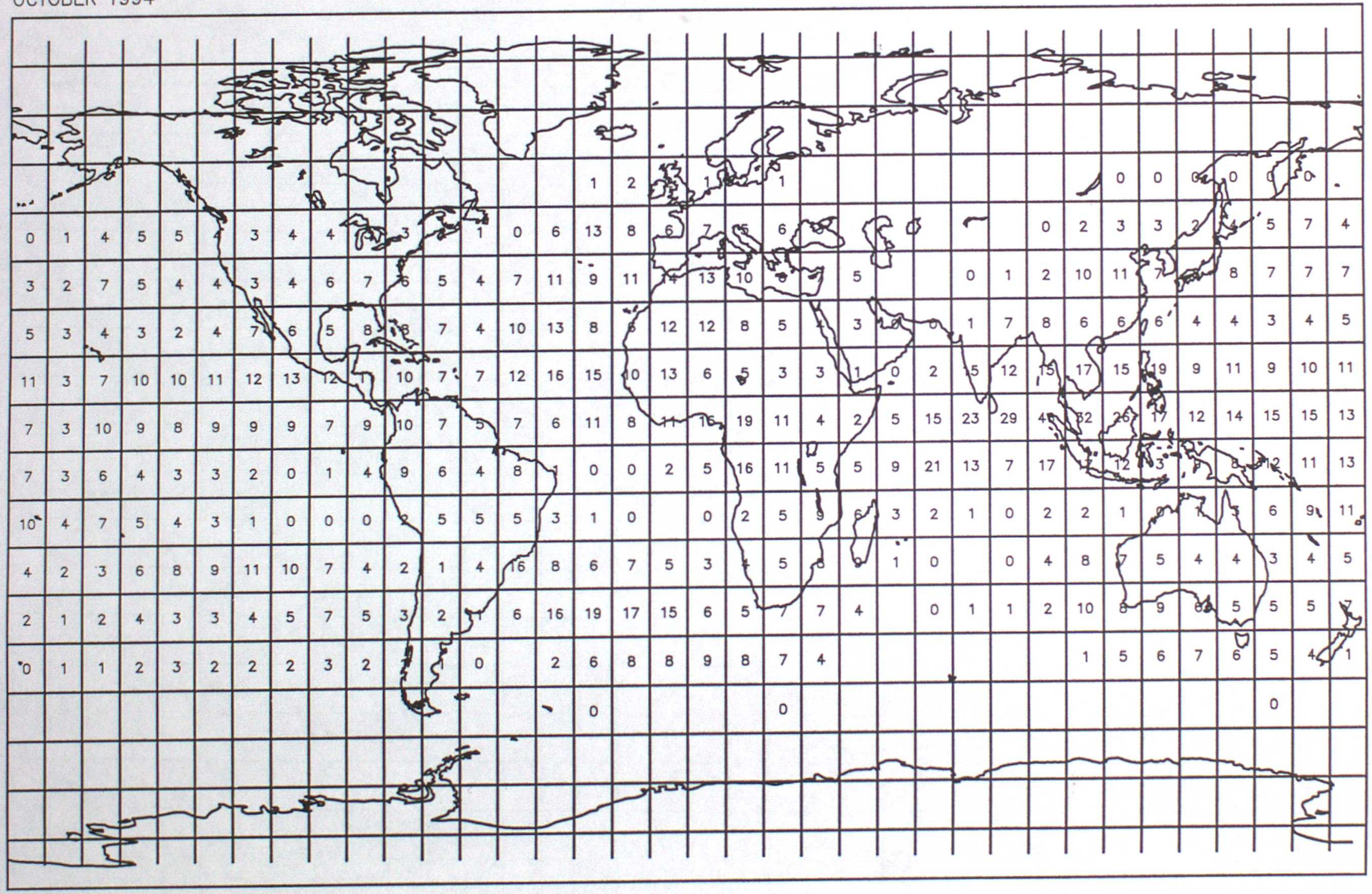
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
OCTOBER 1994
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


−.7 −.6
−1.3 −.6 −.4 −1.1 −1.9 −2.0 −2.5 .7 .1 .6 −1.6 −1.0 .0 −.6 .2 −7.9
−1.2 −.2 −1.0 −.1 −2.8 −3.3 −1.4 −1.7 −1.2 −1.7 −1.0 .5 1.1 −.1 .2 −.2 −3.4 −.9 −1.2 −.7 −.3 .5 4.1
.5 −2.8 −2.6 −2.3 −3.7 −1.0 1.0 .4 .6 −.2 .5 .0 .7 1.5 3.2 2.7 1.5 .3 .8 3.4
1.3 −.1 −.2 −.9 −1.5 −1.8 1.5 2.8 1.0 −.7 .0 −.1 .6 1.7 1.4 5.8 4.5 4.3 5.5 4.7 3.1 3.8 4.1
−.1 −.4 .7 1.2 .4 −1.1 −1.6 −.4 −.4 2.3 1.2 1.2 −1.4 −.6 −.3 .0 1.3 7.2 5.6 4.1 3.5 3.8 4.0 6.4 5.3
.5 −.3 −2.1 2.7 1.0 2.3 −.4 −.8 −2.1 .9 2.3 5.5 4.3 3.9 6.3 6.8 5.0 5.0 3.6
−2.0 −1.4 −.6 −1.2 −.8 −1.9 1.4 1.3 .5 .1 −.4 −.2 2.1 2.7 6.5 3.7 −.1 −2.1 3.4
−2.1 −2.5 −2.4 −1.0 −2.0 −1.6 .4 .7 −2.7 .2 .5 2.1 .6 −.7 −.8 .2 −2.2 −1.9 3.2 .4 −2.4 −2.7 .3 −.6 −.5
.0 −.8 −.8 −.6 −1.4 −1.3 −1.4 −1.4 −.9 −1.7 −5.0 −1.8 −2.4 −.4 −.4 2.0 2.7 2.0 .7 .2 −2.1 −.3 −2.0 −1.1 −.8 −1.6 −2.8
−.6 −1.3 −.9 −1.1 −1.1 .5 −.1 −1.5 −1.3 −1.9 −2.0 −1.4 −1.3 −.5 .5 −.8 .1

SATOBS : RMS O−B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
OCTOBER 1994
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

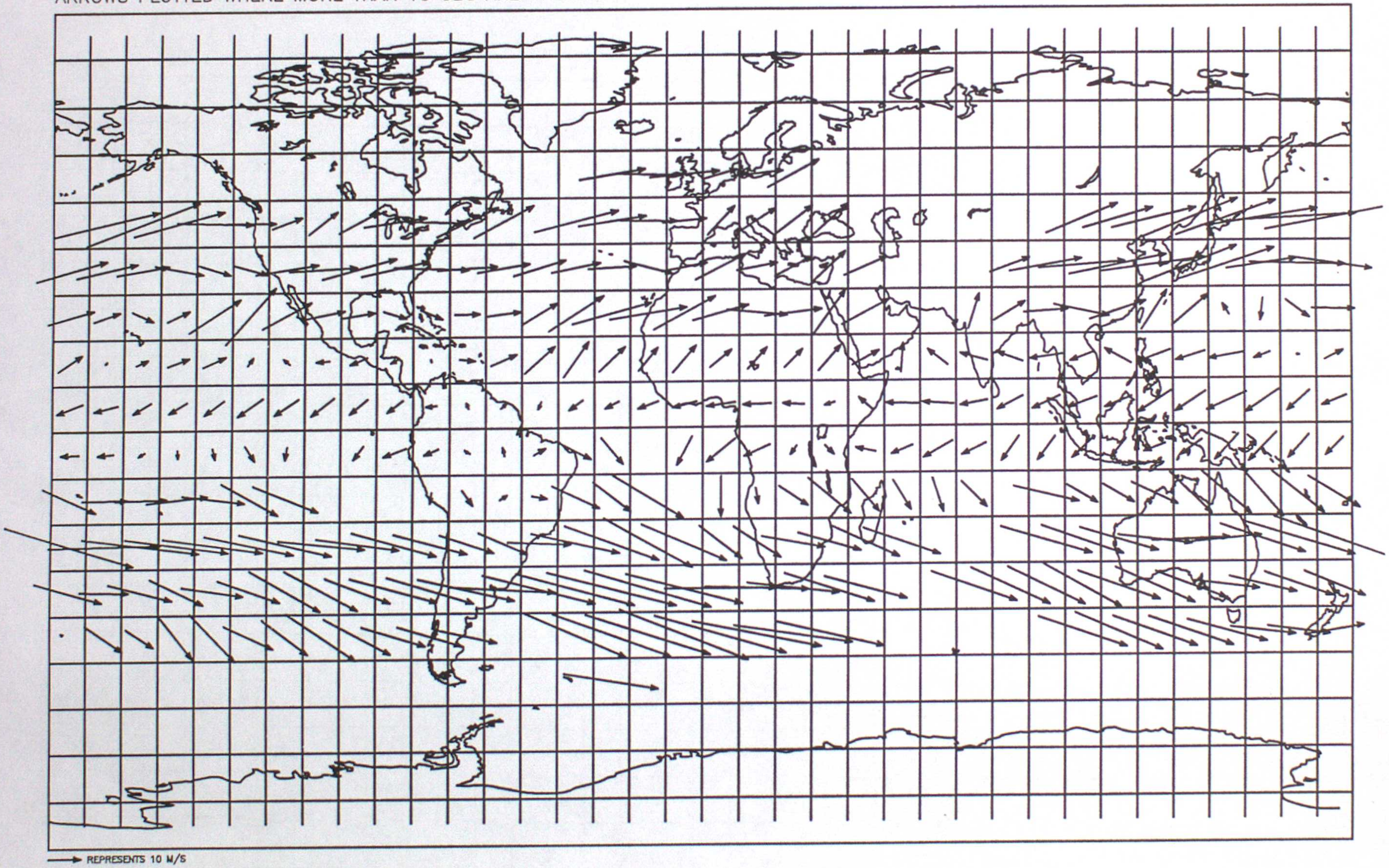

4 4
4 5 4 5 5 5 4 5 5 4 5 5 5 4 4 13
4 6 5 5 6 5 4 4 5 7 5 5 4 4 4 4 5 4 11 7 9 10 10 8 8
3 5 6 5 6 4 4 3 4 4 4 4 5 4 5 9 9 7 7 6 11
4 3 4 4 5 4 3 4 6 5 3 4 4 4 4 3 8 8 7 8 8 8 10 10
4 4 5 4 4 5 5 4 4 5 5 4 4 4 3 3 4 12 9 8 7 7 7 7 10 9
4 3 4 6 5 4 4 4 5 3 4 10 8 8 9 10 9 8 7
4 4 4 4 4 4 3 3 4 5 5 5 5 7 10 9 8 9 8
5 4 5 4 5 5 4 5 7 6 5 5 4 6 5 6 5 6 6 10 10 11 11 9 7 7
5 4 4 4 4 5 5 4 4 5 7 7 7 6 7 7 7 6 6 6 6 9 9 9 10 9 10
6 5 5 4 5 4 4 5 5 7 7 6 7 7 6 6 7

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
OCTOBER 1994


1 2 1 1 0 0 0 0 0 0
0 1 4 5 5 4 3 4 4 3 3 1 0 6 13 8 6 7 5 6 0 2 3 3 2 4 5 7 4
3 2 7 5 4 4 3 4 6 7 6 5 4 7 11 9 11 14 13 10 8 5 0 1 2 10 11 7 8 7 7 7
5 3 4 3 2 4 7 6 5 8 8 7 4 10 13 8 6 12 12 8 5 4 3 0 0 1 7 8 6 6 6 4 4 3 4 5
11 3 7 10 10 11 12 13 12 1 10 7 7 12 16 15 10 13 6 5 3 3 1 0 2 5 12 15 17 15 19 9 11 9 10 11
7 3 10 9 8 9 9 9 7 9 10 7 5 7 6 11 8 11 16 19 11 4 2 5 15 23 29 41 32 26 17 12 14 15 15 13
7 3 6 4 3 3 2 0 1 4 9 6 4 8 1 0 0 2 5 16 11 5 5 9 21 13 7 17 12 12 3 9 8 12 11 13
10 4 7 5 4 3 1 0 0 0 2 5 5 5 3 1 0 0 2 5 9 6 3 2 1 0 2 2 1 0 1 3 6 9 11
4 2 3 6 8 9 11 10 7 4 2 1 4 16 8 6 7 5 3 4 5 8 9 1 0 0 4 8 7 5 4 4 3 4 5
2 1 2 4 3 3 4 5 7 5 3 2 1 6 16 19 17 15 6 5 7 7 4 0 1 1 2 10 8 9 6 5 5 5 7
0 1 1 2 3 2 2 2 3 2 1 1 0 2 6 8 8 9 8 7 4 1 5 6 7 6 5 4 1
0 0 0

SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA
OCTOBER 1994
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


→ REPRESENTS 10 M/S

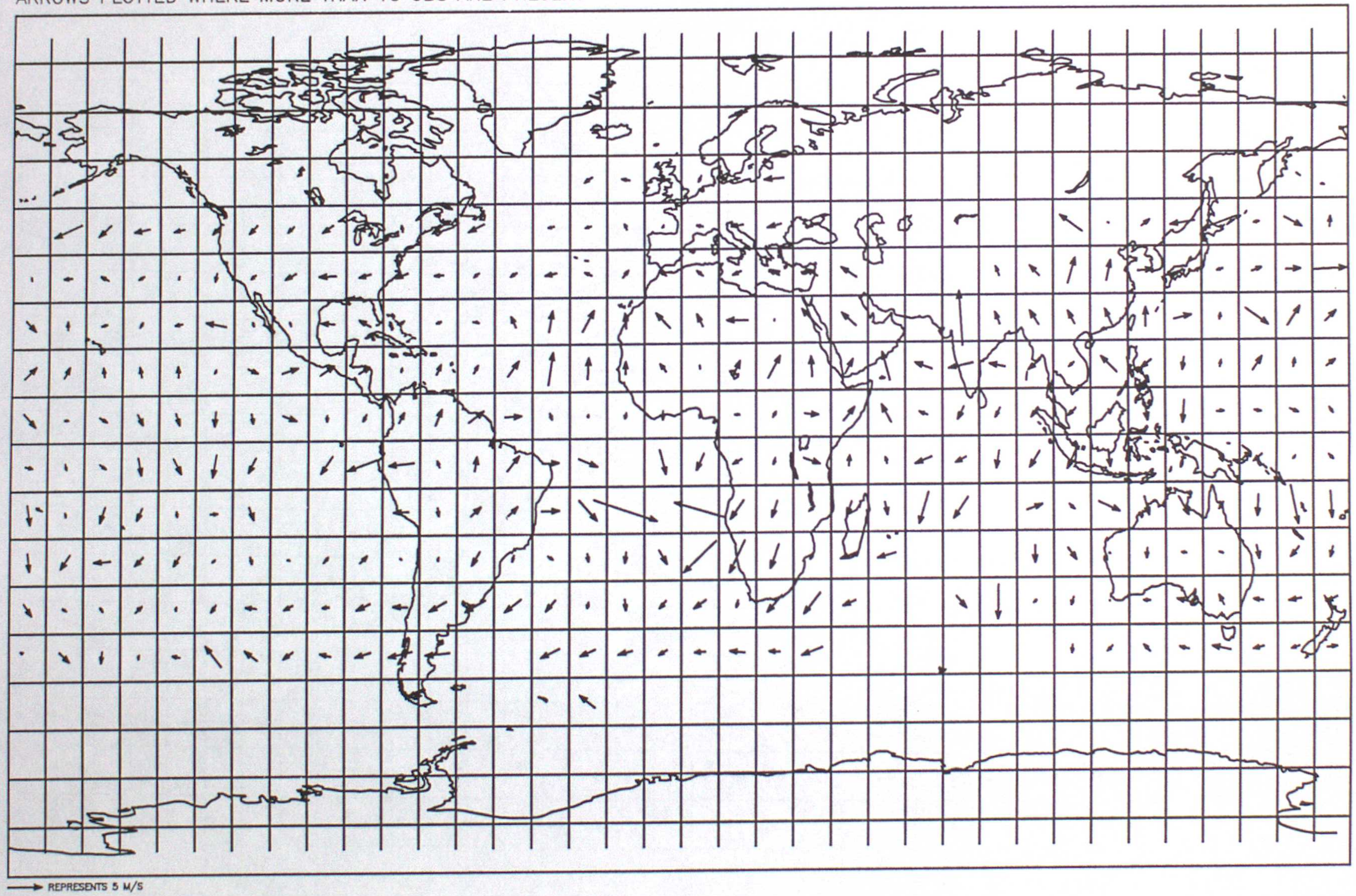
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 101–400 HPA

FIGURE 22

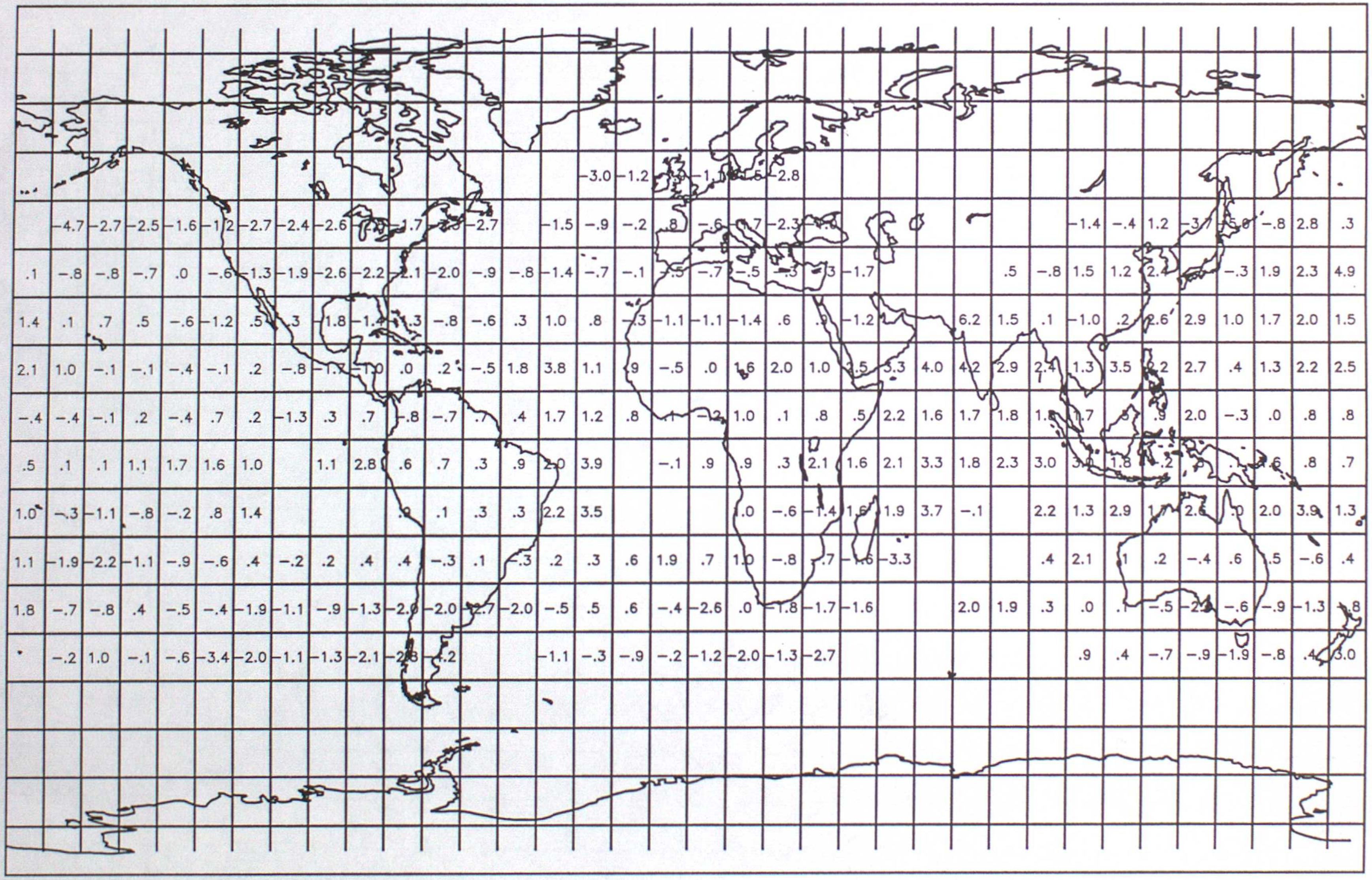
OCTOBER 1994

ALL OBSERVATIONS

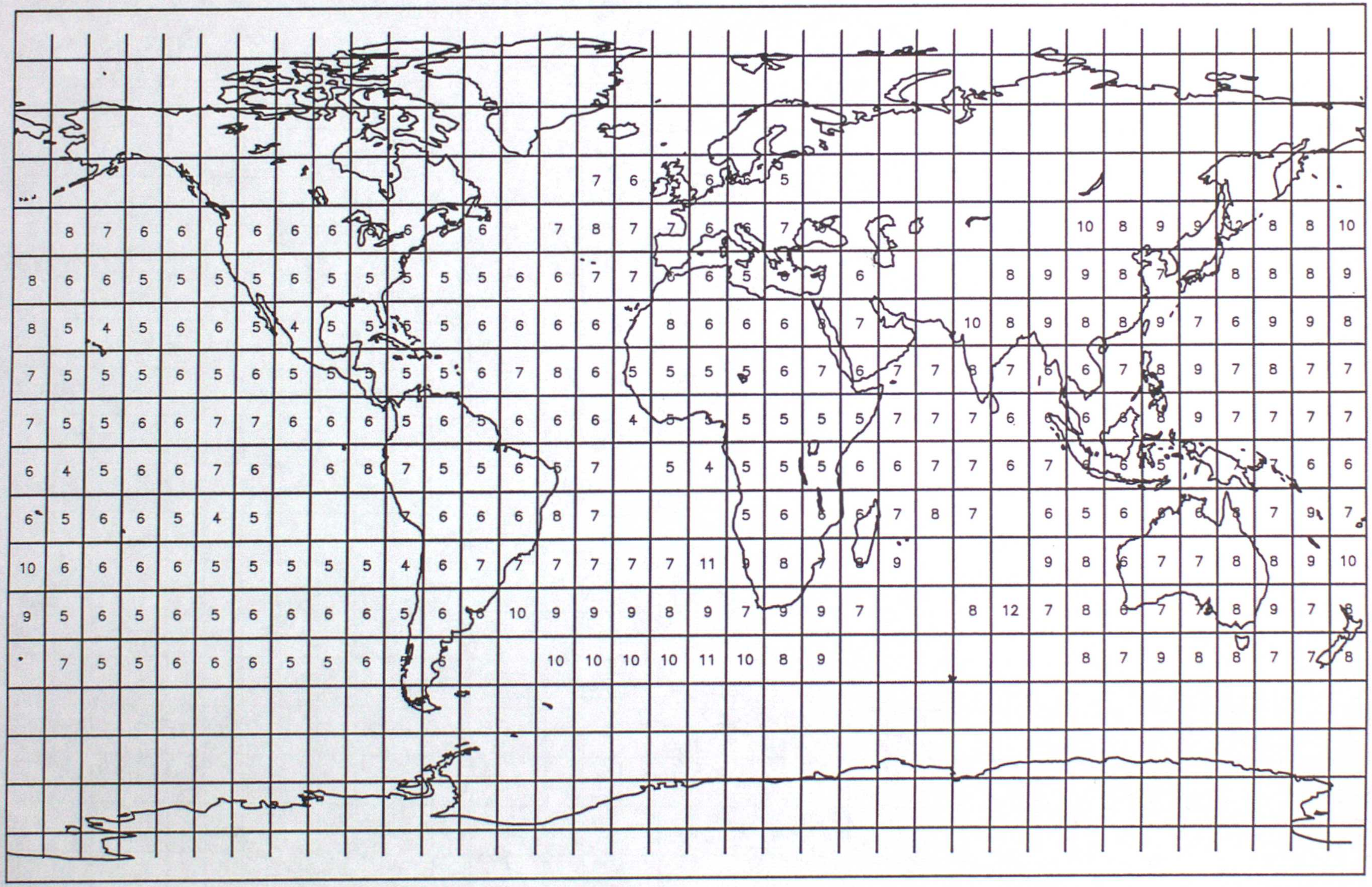
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
OCTOBER 1994
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-3.0 -1.2 -1.1 -2.8
-4.7 -2.7 -2.5 -1.6 -1.2 -2.7 -2.4 -2.6 -1.7 -2.7 -1.5 -.9 -.2 .8 -.6 -1.7 -2.3 -1.4 -.4 1.2 -3.7 -.8 2.8 .3
.1 -.8 -.8 -.7 .0 -.6 -1.3 -1.9 -2.6 -2.2 -2.1 -2.0 -.9 -.8 -1.4 -.7 -.1 -.5 -.7 -.5 -.3 -.3 -1.7 .5 -.8 1.5 1.2 2.4 -.3 1.9 2.3 4.9
1.4 .1 .7 .5 -.6 -1.2 .5 .3 -1.8 -1.4 -1.3 -.8 -.6 .3 1.0 .8 -.3 -1.1 -1.1 -1.4 .6 .9 -1.2 6.2 1.5 .1 -1.0 .2 2.6 2.9 1.0 1.7 2.0 1.5
2.1 1.0 -.1 -.1 -.4 -.1 .2 -.8 -1.7 -1.0 .0 .2 -.5 1.8 3.8 1.1 .9 -.5 .0 1.6 2.0 1.0 2.5 3.3 4.0 4.2 2.9 2.4 1.3 3.5 2.2 2.7 .4 1.3 2.2 2.5
-.4 -.4 -.1 .2 -.4 .7 .2 -1.3 .3 .7 -.8 -.7 .7 .4 1.7 1.2 .8 -.2 1.0 .1 .8 .5 2.2 1.6 1.7 1.8 1.7 .9 2.0 -.3 .0 .8 .8
.5 .1 .1 1.1 1.7 1.6 1.0 1.1 2.8 .6 .7 .3 .9 2.0 3.9 -.1 .9 .9 .3 2.1 1.6 2.1 3.3 1.8 2.3 3.0 3.0 1.8 .2 .6 .8 .7
1.0 -.3 -1.1 -.8 -.2 .8 1.4 .9 .1 .3 .3 2.2 3.5 .0 -.6 -1.4 1.6 1.9 3.7 -.1 2.2 1.3 2.9 1.7 2.6 .0 2.0 3.9 1.3
1.1 -1.9 -2.2 -1.1 -.9 -.6 .4 -.2 .2 .4 .4 -.3 .1 -.3 .2 .3 .6 1.9 .7 1.0 -.8 -.7 -1.6 -3.3 .4 2.1 .1 .2 -.4 .6 .5 -.6 .4
1.8 -.7 -.8 .4 -.5 -.4 -1.9 -1.1 -.9 -1.3 -2.0 -2.0 -2.7 -2.0 -.5 .5 .6 -.4 -2.6 .0 -1.8 -1.7 -1.6 2.0 1.9 .3 .0 .1 -.5 -2.3 -.6 -.9 -1.3 -.8
-.2 1.0 -.1 -.6 -3.4 -2.0 -1.1 -1.3 -2.1 -2.8 -.2 -1.1 -.3 -.9 -.2 -1.2 -2.0 -1.3 -2.7 .9 .4 -.7 -.9 -1.9 -.8 .4 3.0

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
OCTOBER 1994
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

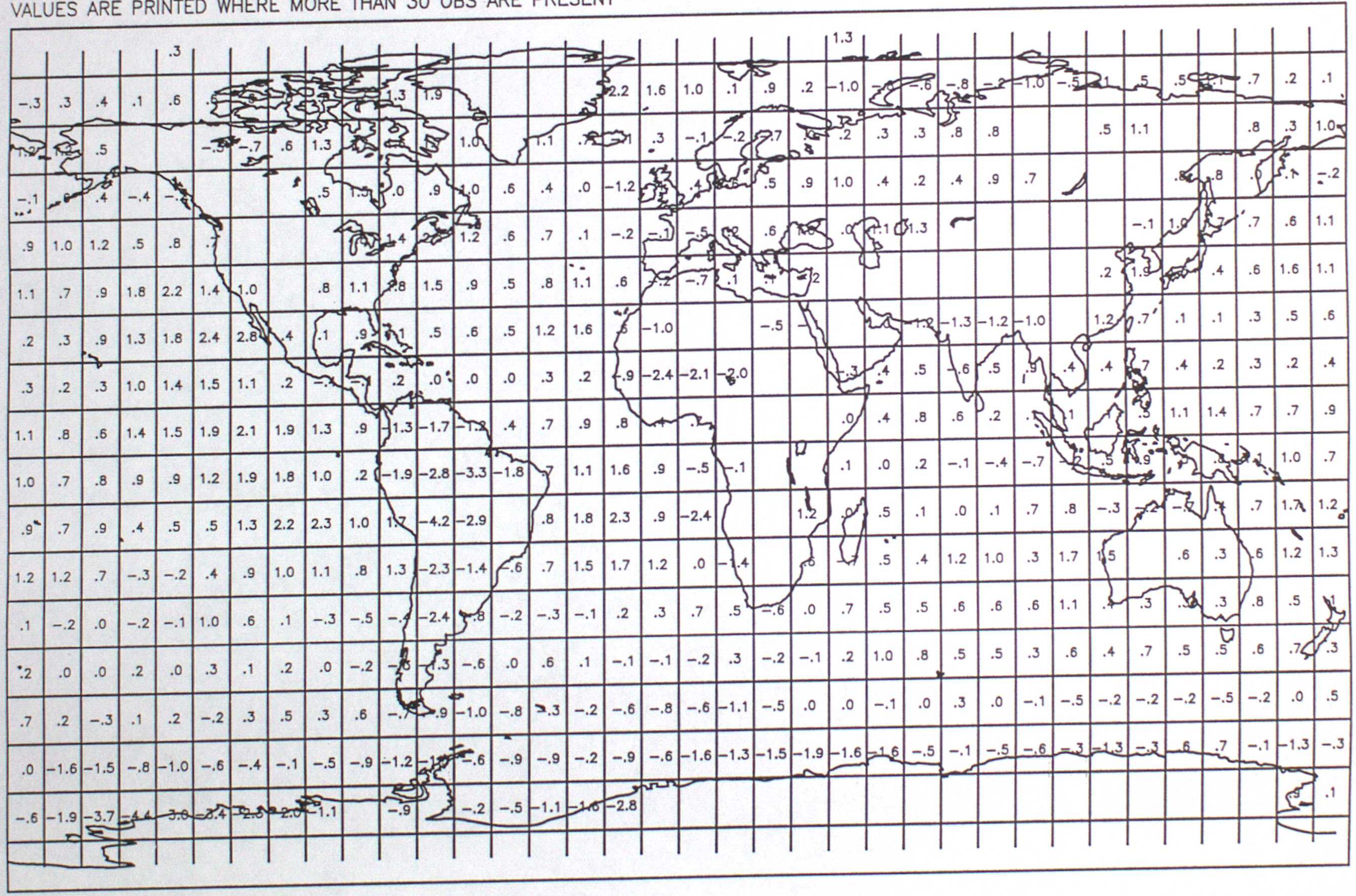
MONTH:October, 94

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-11, NOAA-12 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer:850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

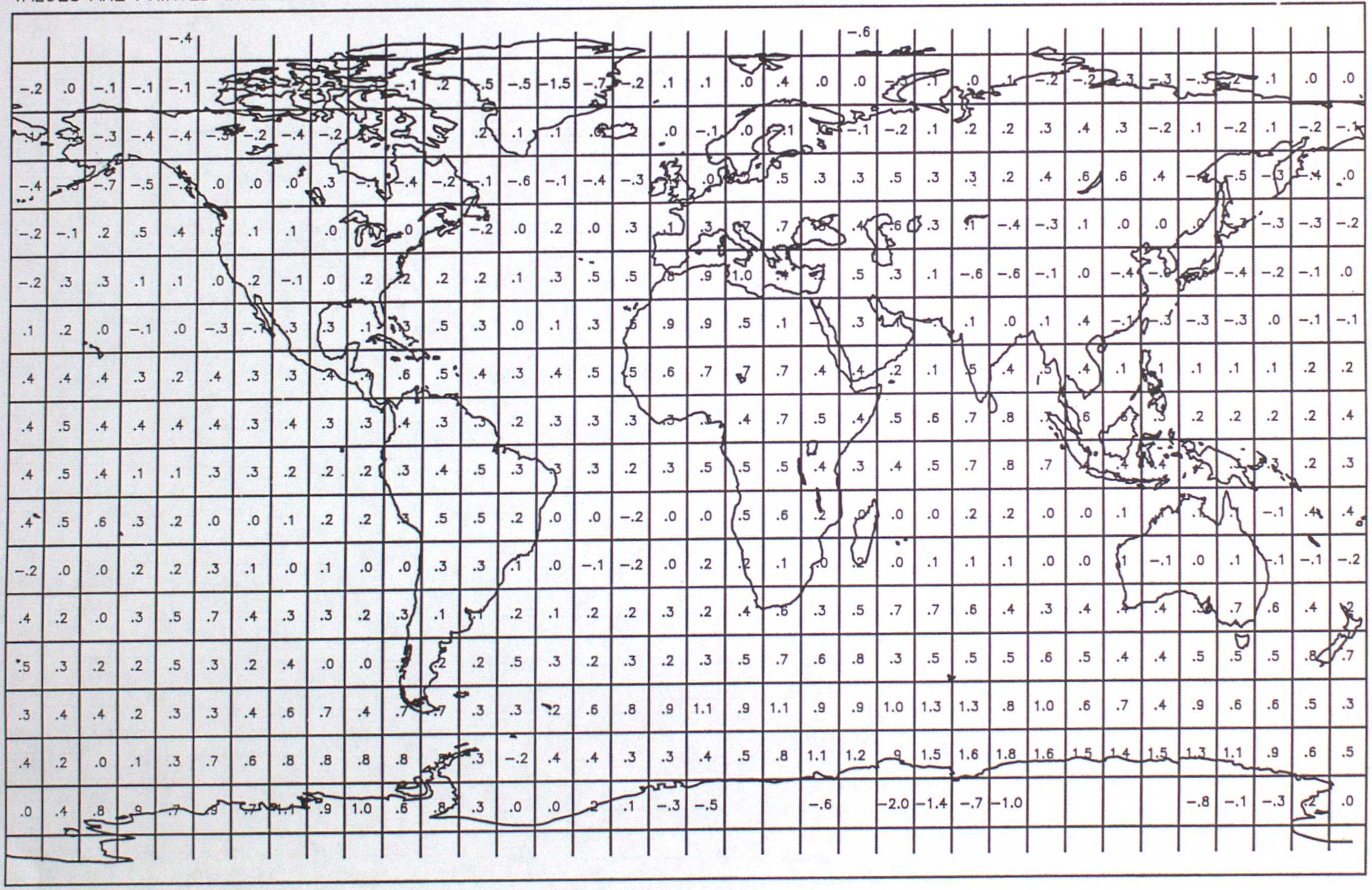
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
OCTOBER 1994
NOAA–11, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 25



500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
OCTOBER 1994
NOAA–11, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 26



–.4 –.6
–.2 .0 –.1 –.1 –.1 .1 .2 .5 –.5 –1.5 –.7 –.2 .1 .1 .0 .4 .0 .0 .0 .1 –.2 –.2 .3 –.3 –.3 .1 .0 .0
–.3 –.4 –.4 –.3 –.2 –.4 –.2 .2 .1 .1 .6 .0 –.1 .0 .1 –.1 –.2 .1 .2 .2 .3 .4 .3 –.2 .1 –.2 .1 –.2 –.1
–.4 –.7 –.5 .0 .0 .0 .3 –.4 –.2 –.1 –.6 –.1 –.4 –.3 .0 .5 .3 .3 .5 .3 .3 .2 .4 .6 .6 .4 –.5 –.3 –.4 .0
–.2 –.1 .2 .5 .4 .1 .1 .0 .0 –.2 .0 .2 .0 .3 .1 .3 .7 .7 .4 .6 .3 .1 –.4 –.3 .1 .0 .0 –.3 –.3 –.2
–.2 .3 .3 .1 .1 .0 .2 –.1 .0 .2 .2 .2 .2 .1 .3 .5 .5 .9 1.0 .5 .3 .1 –.6 –.6 –.1 .0 –.4 –.4 –.2 –.1 .0
.1 .2 .0 –.1 .0 –.3 .3 .3 .1 .3 .5 .3 .0 .1 .3 .9 .9 .5 .1 .3 .1 .0 .1 .4 –.3 –.3 –.3 .0 –.1 –.1
.4 .4 .4 .3 .2 .4 .3 .3 .4 .6 .5 .4 .3 .4 .5 .5 .6 .7 .7 .7 .4 .4 .2 .1 .5 .4 .5 .4 .1 .1 .1 .1 .1 .2 .2
.4 .5 .4 .4 .4 .4 .3 .4 .3 .3 .4 .3 .2 .3 .3 .3 .4 .7 .5 .4 .5 .6 .7 .8 .6 .2 .2 .2 .2 .4
.4 .5 .4 .1 .1 .3 .3 .2 .2 .2 .3 .4 .5 .3 .3 .3 .2 .3 .5 .5 .5 .4 .3 .4 .5 .7 .8 .7 .4 .4 .2 .3
.4 .5 .6 .3 .2 .0 .0 .1 .2 .2 .5 .5 .2 .0 .0 –.2 .0 .0 .5 .6 .2 .0 .0 .2 .2 .0 .0 .1 –.1 .4 .4
–.2 .0 .0 .2 .2 .3 .1 .0 .1 .0 .0 .3 .3 .1 .0 –.1 –.2 .0 .2 .2 .1 .0 .2 .0 .1 .1 .1 .0 .0 .1 –.1 .0 .1 –.1 –.1 –.2
.4 .2 .0 .3 .5 .7 .4 .3 .3 .2 .3 .1 .1 .2 .1 .2 .2 .3 .2 .4 .6 .3 .5 .7 .7 .6 .4 .3 .4 .4 .7 .6 .4 .2
.5 .3 .2 .2 .5 .3 .2 .4 .0 .0 .2 .2 .5 .3 .2 .3 .2 .3 .5 .7 .6 .8 .3 .5 .5 .5 .6 .5 .4 .4 .5 .5 .5 .8 .7
.3 .4 .4 .2 .3 .3 .4 .6 .7 .4 .7 .7 .3 .3 .2 .6 .8 .9 1.1 .9 1.1 .9 .9 1.0 1.3 1.3 .8 1.0 .6 .7 .4 .9 .6 .6 .5 .3
.4 .2 .0 .1 .3 .7 .6 .8 .8 .8 .8 .3 –.2 .4 .4 .3 .3 .4 .5 .8 1.1 1.2 .9 1.5 1.6 1.8 1.6 1.5 1.4 1.5 1.3 1.1 .9 .6 .5
.0 .4 .8 .9 .7 .9 .7 1.1 .9 1.0 .6 .8 .3 .0 .0 .2 .1 –.3 –.5 –.6 –2.0 –1.4 –.7 –1.0 –.8 –.1 –.3 .2 .0

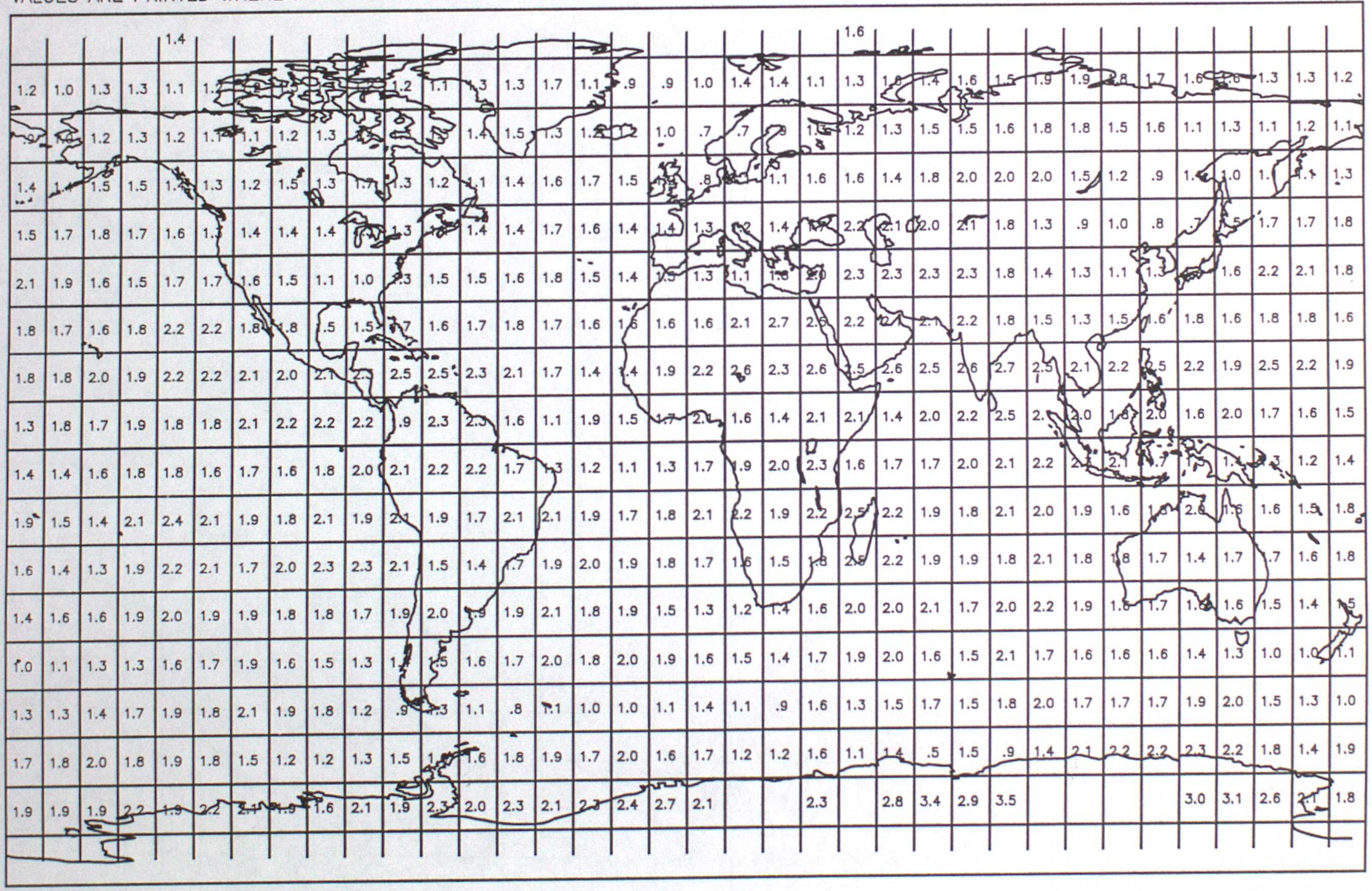
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA

FIGURE 27

OCTOBER 1994

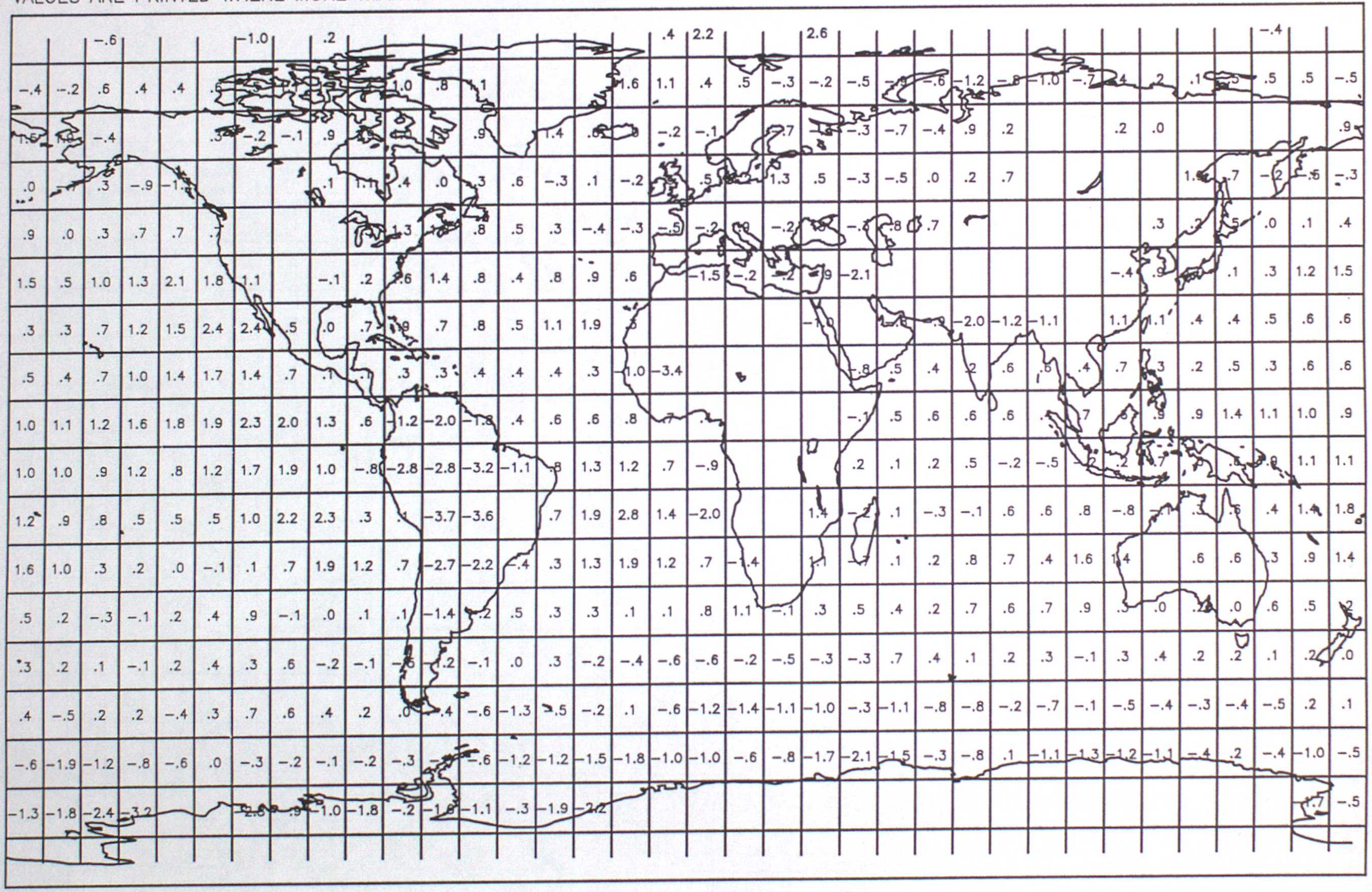
NOAA-11, USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


1.4 1.6
1.2 1.0 1.3 1.3 1.1 1.2 1.2 1.1 1.3 1.3 1.7 1.1 .9 .9 1.0 1.4 1.4 1.1 1.3 1.6 1.4 1.6 1.5 1.9 1.9 1.8 1.7 1.6 1.6 1.3 1.3 1.2
.9 1.0 1.2 1.3 1.2 1.1 1.1 1.2 1.3 1.4 1.5 1.3 1.2 1.2 1.0 .7 .7 .8 1.5 1.2 1.3 1.5 1.5 1.6 1.8 1.8 1.5 1.6 1.1 1.3 1.1 1.2 1.1
1.4 1.4 1.5 1.5 1.4 1.3 1.2 1.5 1.3 1.7 1.3 1.2 1.1 1.4 1.6 1.7 1.5 1.3 .8 1.1 1.6 1.6 1.4 1.8 2.0 2.0 2.0 1.5 1.2 .9 1.4 1.0 1.1 1.1 1.3
1.5 1.7 1.8 1.7 1.6 1.3 1.4 1.4 1.4 1.4 1.3 1.3 1.4 1.4 1.7 1.6 1.4 1.4 1.3 1.2 1.4 1.7 2.2 2.1 2.0 2.1 1.8 1.3 .9 1.0 .8 .7 1.5 1.7 1.7 1.8
2.1 1.9 1.6 1.5 1.7 1.7 1.6 1.5 1.1 1.0 1.3 1.5 1.5 1.6 1.8 1.5 1.4 1.3 1.3 1.1 1.6 2.0 2.3 2.3 2.3 2.3 1.8 1.4 1.3 1.1 1.3 1.6 2.2 2.1 1.8
1.8 1.7 1.6 1.8 2.2 2.2 1.8 1.8 .5 1.5 1.7 1.6 1.7 1.8 1.7 1.6 1.6 1.6 1.6 2.1 2.7 2.5 2.2 2.2 2.1 2.2 1.8 1.5 1.3 1.5 1.6 1.8 1.6 1.8 1.8 1.6
1.8 1.8 2.0 1.9 2.2 2.2 2.1 2.0 2.1 2.5 2.5 2.3 2.1 1.7 1.4 1.4 1.9 2.2 2.6 2.3 2.6 2.5 2.6 2.5 2.6 2.7 2.5 2.1 2.2 2.5 2.2 1.9 2.5 2.2 1.9
1.3 1.8 1.7 1.9 1.8 1.8 2.1 2.2 2.2 2.2 .9 2.3 2.3 1.6 1.1 1.9 1.5 1.7 2.1 1.6 1.4 2.1 2.1 1.4 2.0 2.2 2.5 2.1 2.0 1.8 2.0 1.6 2.0 1.7 1.6 1.5
1.4 1.4 1.6 1.8 1.8 1.6 1.7 1.6 1.8 2.0 2.1 2.2 2.2 1.7 1.3 1.2 1.1 1.3 1.7 1.9 2.0 2.3 1.6 1.7 1.7 2.0 2.1 2.2 2.2 2.1 1.7 1.5 1.3 1.3 1.2 1.4
1.9 1.5 1.4 2.1 2.4 2.1 1.9 1.8 2.1 1.9 2.1 1.9 1.7 2.1 2.1 1.9 1.7 1.8 2.1 2.2 1.9 2.2 2.5 2.2 1.9 1.8 2.1 2.0 1.9 1.6 1.6 2.6 1.5 1.6 1.5 1.8
1.6 1.4 1.3 1.9 2.2 2.1 1.7 2.0 2.3 2.3 2.1 1.5 1.4 1.7 1.9 2.0 1.9 1.8 1.7 1.6 1.5 1.8 2.8 2.2 1.9 1.9 1.8 2.1 1.8 1.8 1.7 1.4 1.7 .7 1.6 1.8
1.4 1.6 1.6 1.9 2.0 1.9 1.9 1.8 1.8 1.7 1.9 2.0 1.9 1.9 2.1 1.8 1.9 1.5 1.3 1.2 1.4 1.6 2.0 2.0 2.1 1.7 2.0 2.2 1.9 1.6 1.7 1.6 1.6 1.5 1.4 1.5
1.0 1.1 1.3 1.3 1.6 1.7 1.9 1.6 1.5 1.3 1.4 1.5 1.6 1.7 2.0 1.8 2.0 1.9 1.6 1.5 1.4 1.7 1.9 2.0 1.6 1.5 2.1 1.7 1.6 1.6 1.6 1.4 1.3 1.0 1.0 1.1
1.3 1.3 1.4 1.7 1.9 1.8 2.1 1.9 1.8 1.2 .9 1.3 1.1 .8 1.1 1.0 1.0 1.1 1.4 1.1 .9 1.6 1.3 1.5 1.7 1.5 1.8 2.0 1.7 1.7 1.7 1.9 2.0 1.5 1.3 1.0
1.7 1.8 2.0 1.8 1.9 1.8 1.5 1.2 1.2 1.3 1.5 1.6 1.6 1.8 1.9 1.7 2.0 1.6 1.7 1.2 1.2 1.6 1.1 1.4 .5 1.5 .9 1.4 2.1 2.2 2.2 2.3 2.2 1.8 1.4 1.9
1.9 1.9 1.9 2.2 1.9 2.2 2.1 1.9 1.6 2.1 1.9 2.3 2.0 2.3 2.1 2.3 2.4 2.7 2.1 2.3 2.8 3.4 2.9 3.5 3.0 3.1 2.6 2.1 1.8

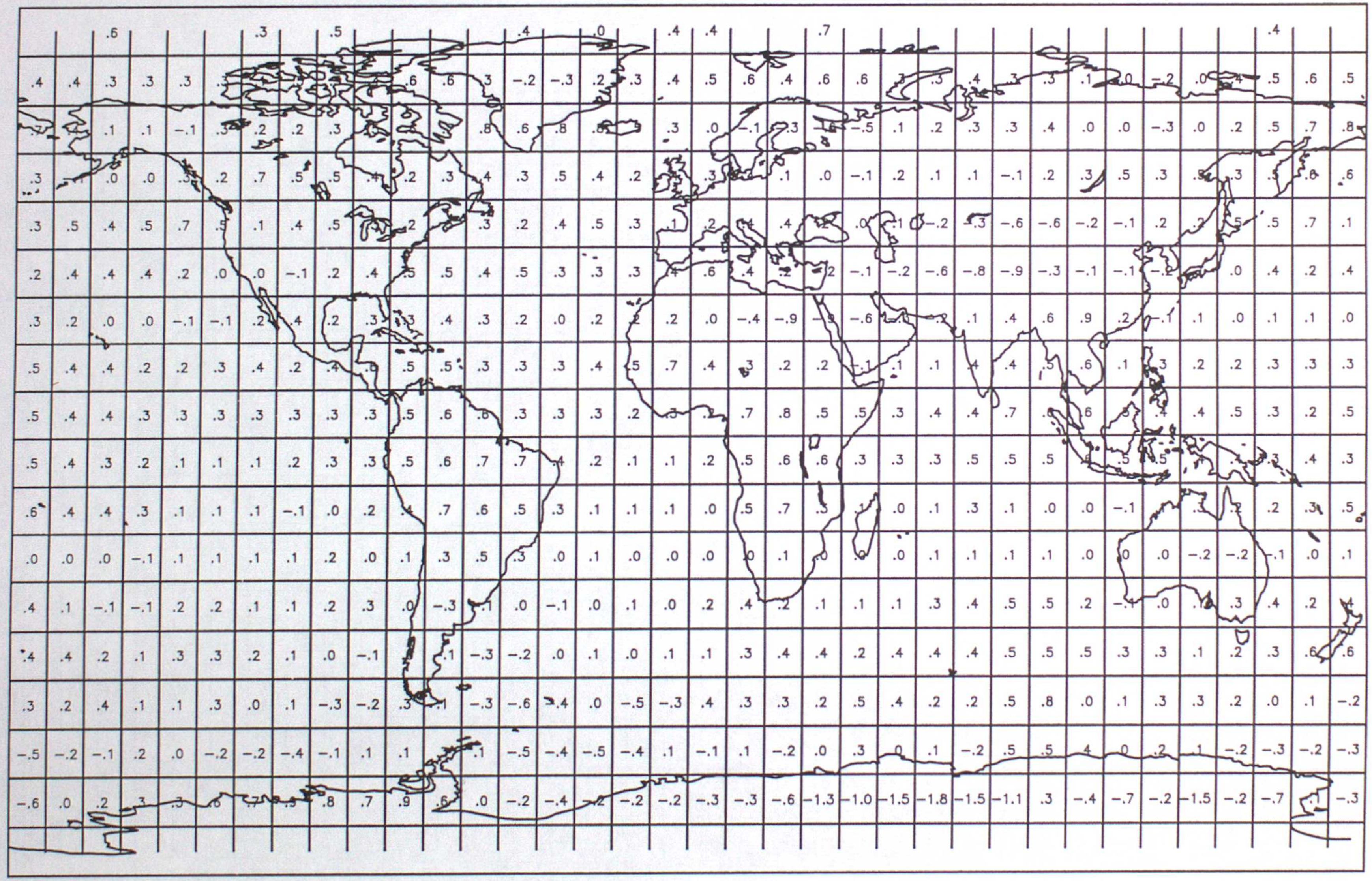
500 KM SATEMS : MEAN O−B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
OCTOBER 1994
NOAA−12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 28


−.6 −1.0 .2 .4 2.2 2.6 −.4
−.4 −.2 .6 .4 .4 .5 1.0 .8 .1 1.6 1.1 .4 .5 −.3 −.2 −.5 −.9 −.6 −1.2 −.8 −1.0 −.7 .4 .2 .1 .5 .5 .5 −.5
1.5 1.9 −.4 .3 −.2 −.1 .9 .9 1.4 .6 −.2 −.1 .7 −.3 −.7 −.4 .9 .2 .2 .0 .9
.0 −.1 .3 −.9 −1.1 .1 1.1 .4 .0 .3 .6 −.3 .1 −.2 .5 1.3 .5 −.3 −.5 .0 .2 .7 1.6 .7 −.2 −.6 −.3
.9 .0 .3 .7 .7 .7 1.3 .8 .5 .3 −.4 −.3 −.5 −.2 .0 −.2 −.3 .8 .7 .3 .2 .5 .0 .1 .4
1.5 .5 1.0 1.3 2.1 1.8 1.1 −.1 .2 .6 1.4 .8 .4 .8 .9 .6 −1.5 −.2 .2 .9 −2.1 −.4 .9 .1 .3 1.2 1.5
.3 .3 .7 1.2 1.5 2.4 2.4 .5 .0 .7 .9 .7 .8 .5 1.1 1.9 .3 −1.0 .6 .9 −2.0 −1.2 −1.1 1.1 1.1 .4 .4 .5 .6 .6
.5 .4 .7 1.0 1.4 1.7 1.4 .7 .1 .1 .3 .3 .4 .4 .4 .3 −1.0 −3.4 .8 .5 .4 .2 .6 .6 .4 .7 .3 .2 .5 .3 .6 .6
1.0 1.1 1.2 1.6 1.8 1.9 2.3 2.0 1.3 .6 −1.2 −2.0 −1.8 .4 .6 .6 .8 .7 −.1 .5 .6 .6 .6 .5 .7 .8 .9 .9 1.4 1.1 1.0 .9
1.0 1.0 .9 1.2 .8 1.2 1.7 1.9 1.0 −.8 −2.8 −2.8 −3.2 −1.1 .8 1.3 1.2 .7 −.9 .2 .1 .2 .5 −.2 −.5 .2 .2 .7 .8 .9 1.1 1.1
1.2 .9 .8 .5 .5 .5 1.0 2.2 2.3 .3 .1 −3.7 −3.6 .7 1.9 2.8 1.4 −2.0 1.4 −.2 .1 −.3 −.1 .6 .6 .8 −.8 −.1 .3 .6 .4 1.4 1.8
1.6 1.0 .3 .2 .0 −.1 .1 .7 1.9 1.2 .7 −2.7 −2.2 −.4 .3 1.3 1.9 1.2 .7 −1.4 1.1 −.7 .1 .2 .8 .7 .4 1.6 1.4 .6 .6 .3 .9 1.4
.5 .2 −.3 −.1 .2 .4 .9 −.1 .0 .1 .1 −1.4 −.2 .5 .3 .3 .1 .1 .8 1.1 −.1 .3 .5 .4 .2 .7 .6 .7 .9 .3 .0 .2 .0 .6 .5 .2
.3 .2 .1 −.1 .2 .4 .3 .6 −.2 −.1 −.6 .2 −.1 .0 .3 −.2 −.4 −.6 −.6 −.2 −.5 −.3 −.3 .7 .4 .1 .2 .3 −.1 .3 .4 .2 .2 .1 .2 .0
.4 −.5 .2 .2 −.4 .3 .7 .6 .4 .2 .0 .4 −.6 −1.3 .5 −.2 .1 −.6 −1.2 −1.4 −1.1 −1.0 −.3 −1.1 −.8 −.8 −.2 −.7 −.1 −.5 −.4 −.3 −.4 −.5 .2 .1
−.6 −1.9 −1.2 −.8 −.6 .0 −.3 −.2 −.1 −.2 −.3 −.6 −1.2 −1.2 −1.5 −1.8 −1.0 −1.0 −.6 −.8 −1.7 −2.1 −1.5 −.3 −.8 .1 −1.1 −1.3 −1.2 −1.1 −.4 .2 −.4 −1.0 −.5
−1.3 −1.8 −2.4 −3.2 −2.6 .9 −1.0 −1.8 −.2 −1.6 −1.1 −.3 −1.9 −2.2 −.7 −.5

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
OCTOBER 1994
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 29



500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
OCTOBER 1994
NOAA-12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 30

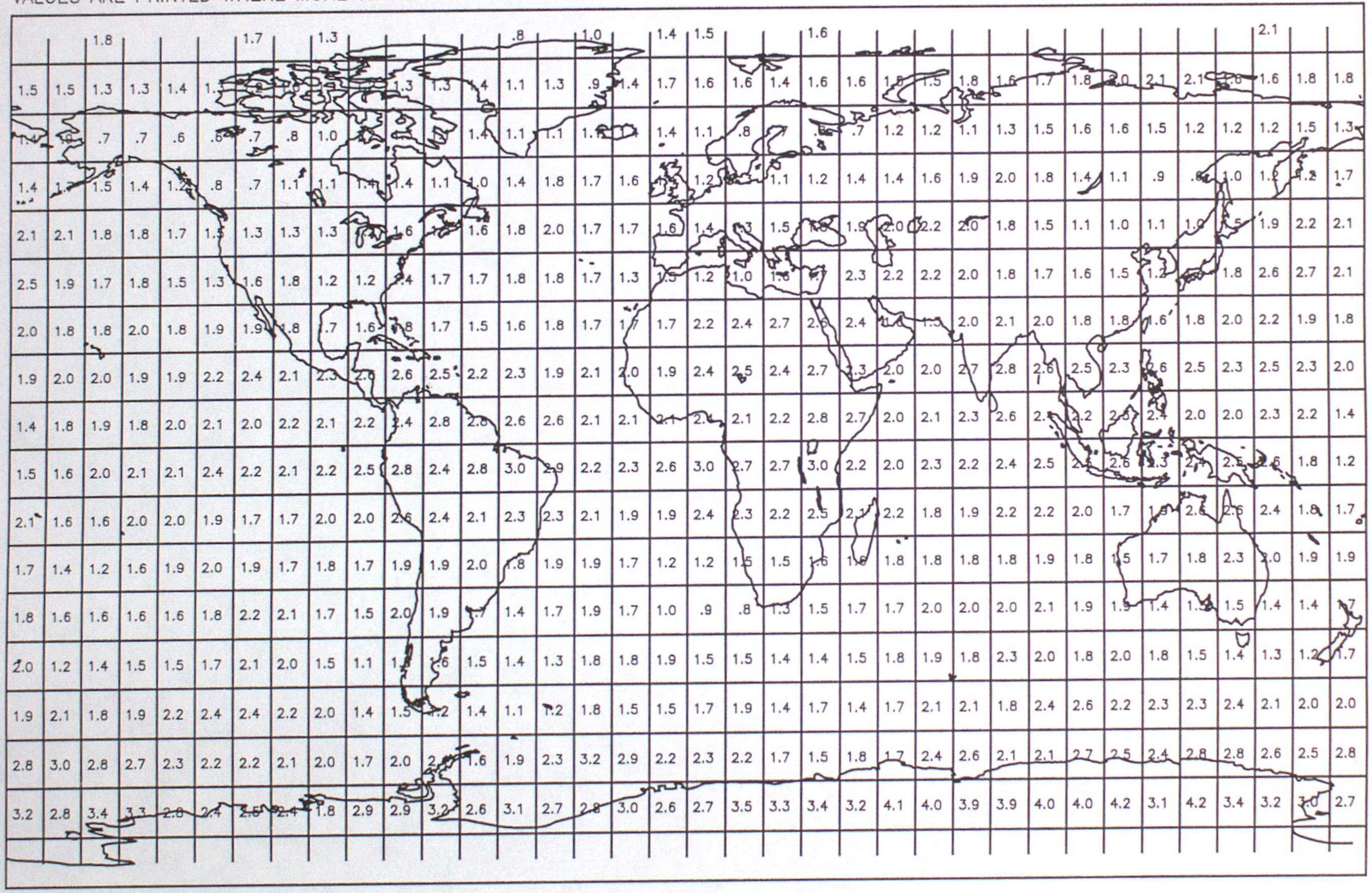

1.8 1.7 1.3 .8 1.0 1.4 1.5 1.6 2.1
1.5 1.5 1.3 1.3 1.4 1.3 1.3 .4 1.1 1.3 .9 1.4 1.7 1.6 1.6 1.4 1.6 1.6 1.5 1.8 1.7 1.8 2.1 2.1 1.6 1.8 1.8
.7 .7 .6 .6 .7 .8 1.0 1.4 1.1 1.1 1.4 1.1 .8 .7 1.2 1.2 1.1 1.3 1.5 1.6 1.6 1.5 1.2 1.2 1.2 1.5 1.3
1.4 1.5 1.4 .8 .7 1.1 1.1 1.4 1.1 1.0 1.4 1.8 1.7 1.6 1.2 1.1 1.2 1.4 1.4 1.6 1.9 2.0 1.8 1.1 .9 1.0 1.7
2.1 2.1 1.8 1.8 1.7 1.3 1.3 1.3 1.6 1.6 1.8 2.0 1.7 1.7 1.6 1.4 1.5 1.9 2.2 2.0 1.8 1.5 1.1 1.0 1.1 1.9 2.2 2.1
2.5 1.9 1.7 1.8 1.5 1.3 1.6 1.8 1.2 1.2 1.7 1.7 1.8 1.8 1.7 1.3 1.2 1.0 2.3 2.2 2.2 2.0 1.8 1.7 1.6 1.5 1.8 2.6 2.7 2.1
2.0 1.8 1.8 2.0 1.8 1.9 1.9 1.8 .7 1.6 1.7 1.5 1.6 1.8 1.7 1.7 2.2 2.4 2.7 2.4 2.0 2.1 2.0 1.8 1.8 1.6 1.8 2.0 2.2 1.9 1.8
1.9 2.0 2.0 1.9 1.9 2.2 2.4 2.1 2.6 2.5 2.2 2.3 1.9 2.1 2.0 1.9 2.4 2.5 2.4 2.7 2.0 2.0 2.7 2.8 2.5 2.3 2.5 2.3 2.5 2.3 2.0
1.4 1.8 1.9 1.8 2.0 2.1 2.0 2.2 2.1 2.2 2.4 2.8 2.6 2.6 2.1 2.1 2.1 2.2 2.8 2.7 2.0 2.1 2.3 2.6 2.2 2.0 2.0 2.3 2.2 1.4
1.5 1.6 2.0 2.1 2.1 2.4 2.2 2.1 2.2 2.5 2.8 2.4 2.8 3.0 2.9 2.2 2.3 2.6 3.0 2.7 2.7 3.0 2.2 2.0 2.3 2.2 2.4 2.5 2.6 1.8 1.2
2.1 1.6 1.6 2.0 2.0 1.9 1.7 1.7 2.0 2.0 2.4 2.1 2.3 2.3 2.1 1.9 1.9 2.4 2.3 2.2 2.5 2.2 1.8 1.9 2.2 2.2 2.0 1.7 2.4 1.7
1.7 1.4 1.2 1.6 1.9 2.0 1.9 1.7 1.8 1.7 1.9 1.9 2.0 1.9 1.9 1.7 1.2 1.2 1.5 1.8 1.8 1.8 1.8 1.9 1.8 1.7 1.8 2.3 1.9 1.9
1.8 1.6 1.6 1.6 1.6 1.8 2.2 2.1 1.7 1.5 2.0 1.9 1.4 1.7 1.9 1.7 1.0 .9 .8 1.5 1.7 1.7 2.0 2.0 2.0 2.1 1.9 1.4 1.5 1.4 1.4
2.0 1.2 1.4 1.5 1.5 1.7 2.1 2.0 1.5 1.1 1.5 1.4 1.3 1.8 1.8 1.9 1.5 1.5 1.4 1.4 1.5 1.8 1.9 1.8 2.3 2.0 1.8 2.0 1.8 1.5 1.4 1.3 1.7
1.9 2.1 1.8 1.9 2.2 2.4 2.4 2.2 2.0 1.4 1.5 1.4 1.1 1.2 1.8 1.5 1.5 1.7 1.9 1.4 1.7 1.4 1.7 2.1 2.1 1.8 2.4 2.6 2.2 2.3 2.3 2.4 2.1 2.0 2.0
2.8 3.0 2.8 2.7 2.3 2.2 2.2 2.1 2.0 1.7 2.0 1.6 1.9 2.3 3.2 2.9 2.2 2.3 2.2 1.7 1.5 1.8 1.7 2.4 2.6 2.1 2.1 2.7 2.5 2.4 2.8 2.8 2.6 2.5 2.8
3.2 2.8 3.4 3.3 2.8 2.4 2.5 2.4 1.8 2.9 2.9 3.2 2.6 3.1 2.7 2.8 3.0 2.6 2.7 3.5 3.3 3.4 3.2 4.1 4.0 3.9 3.9 4.0 4.0 4.2 3.1 4.2 3.4 3.2 3.0 2.7

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures
Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed (m s^{-1})
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 m s^{-1} (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the wind speed > 3 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13556	24.5	-57.9	ALL	MSLP	SUR	62	0	0	1.4	0.6	1.6
13561	27.0	-42.4	ALL	MSLP	SUR	68	0	0	1.0	0.4	1.1
40505	20.0	-65.2	ALL	MSLP	SUR	1	0	0	0.0	0.2	0.2
40705	37.5	-25.2	ALL	MSLP	SUR	2	0	0	6.4	2.7	6.9
40806	26.4	-53.2	ALL	MSLP	SUR	2	0	0	0.3	0.5	0.6
41522	31.6	-69.5	ALL	MSLP	SUR	86	0	0	1.0	0.2	1.0
44617	53.2	-42.1	ALL	MSLP	SUR	515	2	0	1.4	0.0	1.4
44727	55.6	-41.3	ALL	MSLP	SUR	554	0	0	1.4	0.1	1.4
44743	29.9	-46.9	ALL	MSLP	SUR	27	0	0	0.8	0.1	0.9
44761	62.9	-18.7	ALL	MSLP	SUR	681	3	0	1.3	0.2	1.3
44762	55.8	-46.5	ALL	MSLP	SUR	462	2	0	1.4	0.2	1.4
44764	56.2	-36.3	ALL	MSLP	SUR	667	1	0	1.7	0.3	1.7
44766	62.0	-61.4	ALL	MSLP	SUR	568	57	10	1.7	-0.3	1.7
44767	63.8	-29.2	ALL	MSLP	SUR	781	3	0	1.2	0.5	1.3
44768	56.3	-11.1	ALL	MSLP	SUR	587	1	0	1.1	0.1	1.1
44769	59.2	-19.1	ALL	MSLP	SUR	721	2	0	1.4	0.3	1.5
44770	61.7	-37.0	ALL	MSLP	SUR	644	0	0	1.4	-0.1	1.4
44771	59.2	-9.8	ALL	MSLP	SUR	567	0	0	1.4	0.3	1.5
44774	51.6	-17.9	ALL	MSLP	SUR	474	1	0	1.4	0.1	1.4
44775	52.2	-43.2	ALL	MSLP	SUR	497	2	0	1.4	-0.1	1.4
44776	55.9	-35.0	ALL	MSLP	SUR	643	1	0	1.8	0.5	1.9
62501	48.0	-7.1	ALL	MSLP	SUR	165	0	0	1.2	-1.0	1.6
62507	49.6	-12.5	ALL	MSLP	SUR	154	0	0	1.3	0.5	1.4
62508	45.7	-18.1	ALL	MSLP	SUR	68	0	0	3.3	-2.5	4.2
62509	47.9	-19.1	ALL	MSLP	SUR	83	0	0	1.6	0.4	1.7
62510	48.3	-18.5	ALL	MSLP	SUR	141	0	0	1.3	0.3	1.3
62511	45.4	-18.0	ALL	MSLP	SUR	124	0	0	1.3	0.5	1.4
62512	47.4	-17.7	ALL	MSLP	SUR	127	0	0	1.4	0.6	1.5
62513	48.8	-19.3	ALL	MSLP	SUR	149	0	0	1.3	0.4	1.3
62514	37.7	-16.4	ALL	MSLP	SUR	53	0	0	1.1	-0.8	1.4
62524	28.9	-28.8	ALL	MSLP	SUR	251	0	0	1.0	-0.1	1.0
62675	59.8	-12.6	ALL	MSLP	SUR	138	0	0	1.1	-1.5	1.9
62721	58.9	-11.1	ALL	MSLP	SUR	184	0	0	1.1	0.5	1.2
64528	64.6	-32.4	ALL	MSLP	SUR	643	0	0	1.2	-0.3	1.3
64544	63.6	-35.7	ALL	MSLP	SUR	179	0	0	1.1	0.0	1.1
65571	61.6	-36.0	ALL	MSLP	SUR	668	1	0	1.2	-0.1	1.2
65592	58.6	-37.6	ALL	MSLP	SUR	528	17	3	1.9	-0.3	2.0
WIND SPEED											
13556	24.5	-57.9	ALL	SPEED	SUR	174	0	0	1.7	-1.0	2.0
40505	20.0	-65.2	ALL	SPEED	SUR	1	0	0	0.0	-2.3	2.3
40705	37.5	-25.2	ALL	SPEED	SUR	2	0	0	1.3	1.6	2.1
40806	26.4	-53.2	ALL	SPEED	SUR	2	0	0	0.2	1.5	1.5
44617	53.2	-42.1	ALL	SPEED	SUR	311	1	0	2.3	0.0	2.3
44727	55.6	-41.3	ALL	SPEED	SUR	332	0	0	2.1	-1.0	2.3
44762	55.8	-46.5	ALL	SPEED	SUR	270	1	0	2.1	-0.2	2.1
44764	56.2	-36.3	ALL	SPEED	SUR	428	1	0	2.1	-0.2	2.1
44776	55.9	-35.0	ALL	SPEED	SUR	414	0	0	1.9	-1.1	2.2
62508	45.7	-18.1	ALL	SPEED	SUR	68	1	1	4.8	5.2	7.1
62509	47.9	-19.1	ALL	SPEED	SUR	81	0	0	4.9	5.9	7.7
64544	63.6	-35.7	ALL	SPEED	SUR	167	0	0	2.7	-3.2	4.2
WIND DIRECTION											
13556	24.5	-57.9	ALL	DIRN.	SUR	50	0	0	20.3	-10.8	23.0
40505	20.0	-65.2	ALL	DIRN.	SUR	1	0	0	0.0	35.4	35.4
40705	37.5	-25.2	ALL	DIRN.	SUR	2	0	0	5.8	-37.6	38.0
40806	26.4	-53.2	ALL	DIRN.	SUR	2	0	0	3.9	-14.6	15.1
44617	53.2	-42.1	ALL	DIRN.	SUR	299	1	0	21.9	-12.9	25.5
44727	55.6	-41.3	ALL	DIRN.	SUR	304	0	0	23.0	-4.9	23.6

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION											
44762	55.8	-46.5	ALL	DIRN.	SUR	240	1	0	25.5	15.5	29.9
44764	56.2	-36.3	ALL	DIRN.	SUR	373	1	0	23.7	-2.5	23.8
44776	55.9	-35.0	ALL	DIRN.	SUR	381	0	0	57.1	-4.3	57.3
62508	45.7	-18.1	ALL	DIRN.	SUR	65	1	2	37.6	-11.5	39.3
62509	47.9	-19.1	ALL	DIRN.	SUR	73	0	0	25.1	12.1	27.8
64544	63.6	-35.7	ALL	DIRN.	SUR	65	0	0	34.3	36.7	50.3

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2391	0	2	1.8	-0.3	2387	0	2	0	8.3	1.2
AAN	63	0	5	1.9	-0.5	60	0	7	0	8.4	0.2
ACA	623	0	1	2.0	0.1	627	0	1	0	7.3	0.5
AEA	77	8	13	2.4	0.5	77	0	6	0	8.7	-0.5
AEL	128	4	6	2.1	0.4	132	0	6	0	10.3	0.3
AFL	87	1	94	4.4	2.6	88	0	95	0	16.5	0.1
AFR	622	0	5	2.0	-0.1	651	0	5	0	8.3	1.5
AMX	135	1	96	2.3	-0.2	139	1	4	0	8.6	0.3
ANZ	198	0	5	2.0	-1.3	198	0	6	2	7.0	0.7
AOM	194	1	2	1.6	0.6	205	0	2	0	9.2	1.2
AUA	67	0	1	2.2	-1.5	68	0	1	0	7.4	2.0
AVA	111	1	5	2.4	-0.2	113	0	5	0	9.8	0.9
AZA	367	1	4	2.1	0.5	377	0	2	0	8.6	1.0
BAL	175	1	13	2.2	-0.1	181	0	15	1	9.3	1.0
BAW	1319	0	2	1.7	-0.1	1337	0	3	0	8.2	1.2
BBB	26	8	15	1.6	-0.8	26	4	19	0	9.8	2.3
BWA	116	0	3	1.8	0.8	124	0	4	1	10.3	1.4
CDN	637	0	1	1.6	0.2	639	0	2	0	6.6	1.1
CFG	373	0	1	1.9	-0.7	385	0	2	0	8.8	0.2
CKT	40	0	0	1.4	0.4	41	0	2	0	7.7	2.6
CLI	80	0	0	1.6	-0.2	85	0	0	0	5.8	0.7
CLX	85	0	1	1.9	-0.9	86	0	2	1	8.9	0.0
CMM	84	0	4	2.0	0.1	89	0	2	0	7.9	1.0
COA	412	0	2	1.9	0.6	419	0	2	0	8.3	1.1
CRL	66	2	0	1.8	-0.7	69	0	6	1	9.0	2.5
CUB	101	0	3	2.0	0.7	103	0	10	1	12.0	0.3
DAE	34	6	6	2.7	0.8	34	0	0	0	8.1	-1.2
DAL	2380	1	1	1.9	0.3	2386	0	2	0	8.8	1.0
DHL	217	6	98	3.8	-2.1	218	0	98	1	9.4	0.4
DLH	1851	0	4	1.9	0.0	1880	0	5	2	7.7	1.1
DOA	111	0	14	2.2	0.1	115	0	13	1	8.1	1.0
EIA	30	0	7	1.6	-0.4	28	0	100	0	7.2	0.1
ELY	124	0	4	2.0	-0.2	129	0	5	0	9.0	0.5
FDX	363	0	2	1.9	0.8	373	0	3	0	8.9	0.6
FIN	317	0	1	1.8	0.2	316	0	3	1	8.3	0.7
GAF	164	1	1	2.3	0.7	163	0	1	0	8.9	0.8
GFA	29	0	0	2.3	-0.9	28	0	0	0	8.2	-0.1
HLF	63	0	3	1.8	-0.8	64	0	5	0	10.6	0.5
IBE	883	0	13	2.0	0.3	887	0	12	0	10.3	0.7
ICE	470	0	1	1.8	-0.2	472	0	2	0	7.5	1.2
JAL	30	0	0	1.5	0.4	30	0	0	0	7.0	0.8
KAC	21	0	0	2.5	1.6	22	0	5	0	7.0	2.8
KLM	1477	0	2	1.9	0.1	1481	0	2	0	8.6	1.2
LDA	187	0	6	2.0	-0.9	193	0	6	0	8.5	-0.1
LDI	79	1	3	2.2	-1.2	85	0	4	0	8.4	1.6
LIB	42	2	0	1.2	0.5	44	0	0	0	8.5	0.7
LOT	397	1	2	2.1	0.7	394	0	2	0	7.3	0.9
LTU	384	1	2	1.7	0.5	382	0	3	1	8.7	1.3
MKD	102	0	3	1.8	-0.2	107	0	6	0	11.2	0.8
MPH	329	0	2	1.6	-0.2	327	0	2	0	10.1	1.5
NWA	2479	1	2	1.9	0.8	2508	0	3	0	8.3	0.8
PIA	28	0	7	2.7	-0.2	28	0	4	0	8.5	-1.4
RJA	60	0	2	2.7	0.2	61	0	0	0	8.0	0.2
ROT	26	0	4	2.3	-1.0	26	0	4	0	10.9	-0.4
ROY	21	5	5	1.9	0.4	22	0	0	0	7.6	1.2
RRR	136	1	16	2.5	-0.1	137	1	95	0	9.6	1.8
SAB	76	0	4	1.9	0.0	76	0	7	1	9.8	0.7
SAS	1171	0	1	1.8	-0.4	1166	0	2	1	7.5	0.7
SIA	41	0	0	2.0	-0.4	41	0	2	0	9.1	1.8

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SPP	149	0	3	2.3	-0.1	148	0	3	0	10.2	0.9
SVA	136	1	4	1.7	-0.1	141	0	4	1	8.5	0.5
SWR	168	0	1	1.9	0.0	170	0	0	0	6.5	1.2
TAP	357	2	2	2.0	-0.2	358	0	2	0	9.5	0.7
TEJ	34	0	12	2.2	0.6	38	0	13	0	9.3	1.0
TIH	114	2	3	1.8	0.0	115	0	6	0	9.4	2.1
TOW	51	2	12	2.7	0.6	52	0	83	2	8.8	1.0
TSC	74	0	3	2.2	-0.7	79	0	6	0	8.5	2.2
TWA	1093	1	3	2.1	0.4	1105	0	3	0	9.1	0.7
UAL	1565	1	4	2.1	-0.5	1611	0	4	2	8.7	0.5
ULE	67	0	0	1.4	0.1	68	0	1	0	8.0	1.4
UPS	278	3	11	1.9	0.0	285	0	11	0	8.9	1.2
USA	178	0	3	1.8	-0.4	181	0	3	0	8.1	1.7
VIA	120	2	3	1.7	0.5	122	0	2	1	8.1	2.0
VIR	192	1	2	2.0	-0.6	196	0	2	0	7.9	1.7
BA	8760	0	9	1.5	0.3	8755	0	9	0	7.4	1.3
LH	91	0	9	1.9	1.3	91	0	100	0	4.6	-0.1
M	148	2	9	3.0	0.7	152	1	11	0	13.8	2.4
N	225	4	3	2.8	1.3	240	0	4	0	9.4	0.2

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	9	0	26.9	30.2	13.7
DBBH	12	Z	100	6	0	9.8	37.3	36.0
DBLK	00	Z	100	1	0	0.0	45.0	45.0
DBLK	12	Z	100	4	0	26.2	29.2	13.0
F PH	00	Z	100	1	0	0.0	14.0	-14.0
FNOR	00	Z	100	13	0	20.0	25.1	15.2
FNOR	12	Z	100	14	0	18.6	19.4	5.5
FNOU	00	Z	100	14	0	24.7	27.6	12.4
FNOU	12	Z	100	10	0	15.5	16.8	-6.6
FNPH	00	Z	100	9	0	18.4	19.3	-5.8
FNPH	12	Z	100	10	0	14.9	30.3	-26.4
FNRS	00	Z	100	14	0	15.1	19.0	11.5
FNRS	12	Z	100	14	0	18.8	18.8	1.5
GACA	00	Z	100	28	0	17.7	24.7	17.2
GACA	12	Z	100	28	0	19.6	23.7	13.3
JBOA	00	Z	100	1	0	0.0	1.0	-1.0
JCCX	00	Z	100	1	0	0.0	26.0	26.0
JDWX	00	Z	100	1	0	0.0	31.0	31.0
JIVB	00	Z	100	1	0	0.0	35.0	35.0
LDWR	00	Z	100	25	0	27.0	28.3	8.7
LDWR	12	Z	100	23	0	15.4	18.7	10.7
OXYL	00	Z	100	16	0	42.2	61.4	44.6
OXYL	12	Z	100	17	0	22.2	48.1	42.7
OZJP	00	Z	100	20	0	13.0	16.2	9.8
OZJP	12	Z	100	15	0	15.4	20.0	12.7
SHIP	12	Z	100	2	0	52.5	66.3	40.5
SHIPAA	12	Z	100	2	0	5.5	27.1	26.5
SHIPS	00	Z	100	7	1	26.5	58.5	52.1
SHIPS	12	Z	100	5	0	14.6	42.2	39.6
V2LV	00	Z	100	27	0	19.8	20.5	-5.2
V2LV	12	Z	100	26	0	47.3	47.3	1.4
V2LX	00	Z	100	26	0	27.7	31.7	15.4
V2LX	12	Z	100	24	0	28.6	33.1	16.7
ZDLG	00	Z	100	1	0	0.0	32.0	32.0
ZDLG	12	Z	100	6	0	11.1	56.0	54.8
03953	00	Z	100	30	0	12.9	24.2	20.5
03953	12	Z	100	30	0	16.8	31.4	26.5
04018	00	Z	100	30	0	19.0	31.1	24.6
04018	12	Z	100	30	0	17.7	39.9	35.8
04220	00	Z	100	30	0	15.9	21.7	14.8
04220	12	Z	100	31	0	13.5	22.8	18.3
04270	00	Z	100	28	0	17.9	27.6	21.0
04270	12	Z	100	30	0	18.8	24.7	16.0
04339	00	Z	100	31	0	13.6	24.8	20.7
04339	12	Z	100	31	0	15.9	30.5	26.0
04360	00	Z	100	30	0	17.7	28.8	22.6
04360	12	Z	100	30	0	16.8	35.3	31.0
08001	00	Z	100	28	0	18.2	24.7	16.7
08001	12	Z	100	28	0	27.5	38.6	27.1
08508	00	Z	100	25	0	21.6	21.9	3.3
08508	12	Z	100	29	0	23.7	23.7	0.8
08594	00	Z	100	26	0	20.8	23.1	10.2
08594	12	Z	100	28	0	15.9	19.8	11.9
60020	00	Z	100	28	0	25.7	27.6	-10.1
60020	12	Z	100	29	0	23.2	23.7	-4.6
71600	00	Z	100	31	0	22.4	22.6	2.8
71600	12	Z	100	27	0	16.6	30.8	26.0
72201	00	Z	100	22	0	18.3	20.5	9.3
72201	12	Z	100	25	0	16.2	26.9	21.5
72402	00	Z	100	28	0	24.7	42.9	35.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
72402	12	Z	100	28	0	19.5	58.2	54.9
74494	00	Z	100	27	0	16.7	19.5	-10.0
74494	12	Z	100	29	0	25.2	27.3	10.5

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	7	0	16.2	17.6	6.9
DBBH	12	Z	500	7	0	15.7	15.7	-1.6
DBLK	00	Z	500	1	0	0.0	5.0	-5.0
DBLK	12	Z	500	3	0	2.4	14.9	14.7
EHOA	00	Z	500	1	0	0.0	8.0	8.0
F PH	00	Z	500	1	0	0.0	4.0	-4.0
FNOR	00	Z	500	14	0	12.4	12.6	2.4
FNOR	12	Z	500	14	0	11.3	11.6	2.4
FNOU	00	Z	500	14	0	14.5	15.9	6.5
FNOU	12	Z	500	13	0	12.5	13.7	5.5
FNPH	00	Z	500	13	0	10.1	11.0	-4.4
FNPH	12	Z	500	11	0	8.5	11.2	-7.4
FNRS	00	Z	500	15	0	10.8	11.4	3.7
FNRS	12	Z	500	14	0	14.1	14.2	-1.5
GACA	00	Z	500	28	0	11.3	14.0	8.2
GACA	12	Z	500	28	0	8.6	10.5	6.0
JBOA	00	Z	500	1	0	0.0	1.0	1.0
JCCX	00	Z	500	1	0	0.0	3.0	-3.0
JDWX	00	Z	500	1	0	0.0	4.0	4.0
JIVB	00	Z	500	1	0	0.0	11.0	11.0
LDWR	00	Z	500	25	0	16.6	17.9	6.8
LDWR	12	Z	500	23	0	13.6	15.8	8.2
OXYL	00	Z	500	16	0	25.6	36.3	25.7
OXYL	12	Z	500	17	0	17.7	22.6	14.1
OZJP	00	Z	500	20	0	14.8	15.5	4.8
OZJP	12	Z	500	15	0	14.8	14.8	1.3
SHIP	00	Z	500	2	0	38.0	50.3	-33.0
SHIP	12	Z	500	1	1	0.0	27.0	-27.0
SHIPAA	00	Z	500	2	0	3.5	15.9	15.5
SHIPAA	12	Z	500	2	0	0.5	13.5	13.5
SHIPS	00	Z	500	16	0	22.0	32.7	24.3
SHIPS	12	Z	500	14	0	8.3	19.0	17.1
V2LV	00	Z	500	28	0	16.5	18.6	-8.7
V2LV	12	Z	500	27	0	14.3	15.3	-5.3
V2LX	00	Z	500	27	0	14.5	15.0	4.1
V2LX	12	Z	500	25	0	15.7	15.9	2.7
ZDLG	00	Z	500	1	0	0.0	15.0	15.0
ZDLG	12	Z	500	6	0	14.5	30.1	26.3
03953	00	Z	500	31	0	11.1	12.6	6.0
03953	12	Z	500	30	0	10.9	13.7	8.3
04018	00	Z	500	31	0	13.8	16.5	9.1
04018	12	Z	500	31	0	14.4	18.3	11.3
04220	00	Z	500	30	0	15.2	15.7	3.8
04220	12	Z	500	31	0	11.8	13.7	6.9
04270	00	Z	500	30	0	14.0	16.0	7.8
04270	12	Z	500	31	0	21.9	23.1	7.3
04339	00	Z	500	31	0	13.4	13.9	3.7
04339	12	Z	500	31	0	13.4	13.4	0.8
04360	00	Z	500	30	0	14.0	14.6	4.3
04360	12	Z	500	30	0	15.2	16.0	5.1
08001	00	Z	500	30	0	11.5	12.0	3.3
08001	12	Z	500	29	0	9.7	10.5	4.0
08508	00	Z	500	29	0	11.9	13.5	6.3
08508	12	Z	500	31	0	14.8	14.9	-1.0
08594	00	Z	500	26	0	8.3	10.9	7.1
08594	12	Z	500	29	0	10.0	11.7	6.0
2LV	00	Z	500	1	0	0.0	7.0	-7.0
60020	00	Z	500	29	0	13.5	15.3	7.1
60020	12	Z	500	29	0	16.8	17.3	4.0
71600	00	Z	500	31	0	15.4	15.8	-3.8

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
71600	12	Z	500	29	0	9.2	9.3	1.4
72201	00	Z	500	27	0	6.6	8.6	5.4
72201	12	Z	500	26	0	6.3	9.5	7.1
72402	00	Z	500	29	0	7.9	14.5	12.1
72402	12	Z	500	30	0	9.4	19.6	17.2
74494	00	Z	500	30	0	8.9	9.3	-2.8
74494	12	Z	500	29	0	18.8	19.1	3.4

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO  OBS                NUM    NUM     %
IDENT TIME ELM   LEV     OBS   GROSS   REJ     RMS    UBIAS   VBIAS

DBBH   00   V    100      7      0      0      0.0    -0.3     2.0
DBBH   12   V    100      5      0      0      0.0    -1.5     0.8
DBLK   00   V    100      1      0      0      0.0    -1.4     0.6
DBLK   12   V    100      5      0      0      0.0    -2.2     0.2
F PH   00   V    100      1      0      0      0.0    -6.4    -5.5

FNOR   00   V    100     13      0      0      0.0     1.5     0.4
FNOR   12   V    100     14      0      0      2.5     0.6    -0.4
FNOU   00   V    100     14      0      0      2.3    -0.3    -0.5
FNOU   12   V    100     10      0      0      5.2     0.0    -2.0
FNPH   00   V    100      8      0      0      4.1    -2.0     1.1

FNPH   12   V    100      8      0      0      4.1    -1.0     0.5
FNRS   00   V    100     13      0      0      4.1    -1.0    -0.3
FNRS   12   V    100     14      0      0      2.5    -2.1     0.2
GACA   00   V    100     28      0      0      3.8    -0.2    -2.1
GACA   12   V    100     28      0      0      2.0    -0.6    -1.4

JBOA   00   V    100      1      0      0      2.5     0.0    -1.5
JCCX   00   V    100      1      0      0      2.5     0.0     1.6
JDWX   00   V    100      1      0      0      2.5    -3.8    -2.5
JIVB   00   V    100      1      0      0      2.5     1.9     4.3
LDWR   00   V    100     25      0      0      2.5     0.3    -0.6

LDWR   12   V    100     23      0      0      2.9    -0.8    -1.7
OXYL   00   V    100     16      0      0      1.9     0.7     0.1
OXYL   12   V    100     17      0      0      2.3    -0.3     0.8
OZJP   00   V    100     19      0      0      2.7    -0.2    -0.4
OZJP   12   V    100     15      0      0      2.7    -0.3    -0.2

SHIP   12   V    100      2      0      0      2.1    -0.2     1.3
SHIPAA 12   V    100      2      0      0      2.1    -1.1     0.6
SHIPS  00   V    100      7      0      0      2.1    -1.4    -0.2
SHIPS  12   V    100      5      0      0      2.1     0.7    -0.3
V2LV   00   V    100     27      0      0      2.1     2.2    -0.2

V2LV   12   V    100     25      0      0      4.5    -1.4    -0.3
V2LX   00   V    100     25      0      0      3.4     0.7    -0.3
V2LX   12   V    100     24      0      0      4.1     0.7    -0.6
ZDLG   00   V    100      1      0      0      4.7     1.8    -4.9
ZDLG   12   V    100      5      0      0      4.7    -5.6     0.8

03953  00   V    100     30      0      0      2.7    -0.2    -1.2
03953  12   V    100     30      0      0      2.9    -1.2    -0.3
04018  00   V    100     30      0      0      2.0    -0.6    -0.9
04018  12   V    100     30      0      0      2.5    -1.0    -1.7
04220  00   V    100     30      0      0      2.4     0.6     0.5

04220  12   V    100     31      0      0      2.2    -0.4     0.1
04270  00   V    100     28      0      0      1.8    -0.2     0.4
04270  12   V    100     30      0      3      3.6    -0.7     1.2
04339  00   V    100     31      0      0      3.3     0.7    -0.2
04339  12   V    100     31      0      0      3.3     0.2    -1.1

04360  00   V    100     30      0      0      2.3    -0.2     0.3
04360  12   V    100     30      0      0      3.0     0.2     0.0
08001  00   V    100     27      0      0      3.4     0.4     0.5
08001  12   V    100     28      0      0      1.9    -1.1    -0.1
08508  00   V    100     25      0      0      3.2    -3.4    -0.8

08508  12   V    100     28      0      0      4.0    -3.1    -0.1
08594  00   V    100     26      0      0      3.1     1.2     1.6
08594  12   V    100     26      0      0      3.8     0.4     1.2
60020  00   V    100     28      0      0      3.2     1.8     1.2
60020  12   V    100     29      0      0      4.1     0.5     1.9

71600  00   V    100     31      0      0      4.7    -0.8     0.9
71600  12   V    100     27      0      0      2.2     0.1     0.8
72201  00   V    100     21      0      0      3.6     0.6     1.2
72201  12   V    100     22      0      0      3.0    -0.2     0.8
72402  00   V    100     25      0      0      3.2    -1.2     1.6
```

```
  WMO  OBS                NUM    NUM       %
 IDENT TIME ELM   LEV     OBS   GROSS     REJ     RMS     UBIAS    VBIAS

 72402  12   V    100     25      0        0      3.6     -2.1      1.5
 74494  00   V    100     24      0        0      2.5     -1.2      1.0
 74494  12   V    100     26      0        0      2.4     -0.9      0.8
```

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH:October, 94

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored
- :NUM OBS :Number of observations available at level shown during period.
- :NUM GROSS :Number of gross errors at level shown during period.
- :% REJ :Percentage of observations rejected by quality control at level shown during period.
- :UBIAS,VBIAS:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
- :RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	7	0	0	0.0	0.9	0.0
DBBH	12	V	500	7	0	0	0.0	0.1	-0.5
DBLK	00	V	500	1	0	0	0.0	-4.5	-0.7
DBLK	12	V	500	3	0	0	0.0	1.4	0.2
EHOA	00	V	500	1	0	0	0.0	-1.2	-3.8
F PH	00	V	500	1	0	0	0.0	1.0	-0.4
FNOR	00	V	500	14	0	0	0.0	1.1	-0.7
FNOR	12	V	500	14	0	0	3.0	0.3	-1.0
FNOU	00	V	500	14	0	0	2.4	1.1	1.0
FNOU	12	V	500	13	0	0	4.4	-1.3	-0.9
FNPH	00	V	500	13	0	0	2.7	0.9	0.0
FNPH	12	V	500	11	0	0	3.6	-0.2	0.8
FNRS	00	V	500	16	0	0	2.6	0.3	0.0
FNRS	12	V	500	14	0	0	2.6	-0.6	-0.6
GACA	00	V	500	28	0	0	2.9	0.7	0.1
GACA	12	V	500	28	0	0	3.5	-0.1	-0.4
JBOA	00	V	500	1	0	0	3.6	-1.3	-1.5
JCCX	00	V	500	1	0	0	3.6	-1.3	-0.9
JDWX	00	V	500	1	0	0	3.6	-1.9	0.9
JIVB	00	V	500	1	0	0	3.6	-1.5	-0.1
LDWR	00	V	500	25	0	0	3.6	0.3	-0.5
LDWR	12	V	500	23	0	0	2.2	0.2	-0.8
OXYL	00	V	500	16	0	0	2.7	0.2	0.4
OXYL	12	V	500	17	0	0	4.1	-1.3	0.7
OZJP	00	V	500	20	0	0	4.0	-0.2	0.0
OZJP	12	V	500	15	0	0	3.6	-0.1	-0.4
SHIP	00	V	500	2	0	0	2.0	2.4	-3.3
SHIP	12	V	500	2	0	0	2.0	0.1	2.3
SHIPAA	00	V	500	1	0	0	2.0	-0.1	-3.6
SHIPAA	12	V	500	2	0	0	2.0	0.2	-2.8
SHIPS	00	V	500	16	0	0	2.0	0.4	-0.6
SHIPS	12	V	500	13	0	0	2.5	-0.9	-0.4
V2LV	00	V	500	28	0	0	2.5	1.4	-0.1
V2LV	12	V	500	26	0	0	2.9	-0.1	0.6
V2LX	00	V	500	27	0	0	1.9	0.3	0.8
V2LX	12	V	500	25	0	0	2.8	-0.9	0.8
ZDLG	00	V	500	1	0	0	2.6	-2.5	0.3
ZDLG	12	V	500	6	0	16	2.6	-4.7	3.1
03953	00	V	500	31	0	0	2.9	-0.1	0.3
03953	12	V	500	30	0	0	3.5	-0.8	0.6
04018	00	V	500	31	0	0	3.3	0.2	-0.3
04018	12	V	500	31	0	0	3.1	-1.2	1.2
04220	00	V	500	30	0	0	1.8	0.8	-0.3
04220	12	V	500	31	0	0	2.5	-0.8	0.1
04270	00	V	500	30	0	0	2.3	0.6	-0.7
04270	12	V	500	31	0	0	4.1	-0.5	-0.3
04339	00	V	500	31	0	3	3.4	-0.9	-0.2
04339	12	V	500	31	0	0	2.9	-0.4	0.4
04360	00	V	500	30	0	0	3.8	-0.3	0.1
04360	12	V	500	30	0	0	2.6	-1.4	-0.2
08001	00	V	500	30	0	0	2.5	0.0	-0.5
08001	12	V	500	29	0	0	3.2	0.2	-0.2
08508	00	V	500	29	0	0	3.3	1.2	-0.4
08508	12	V	500	31	0	0	4.4	-0.2	-0.8
08594	00	V	500	26	0	0	2.8	0.0	-0.9
08594	12	V	500	29	0	0	2.2	-1.6	0.1
60020	00	V	500	28	0	0	3.4	-0.6	0.1
60020	12	V	500	28	0	0	2.3	-1.9	-1.1
71600	00	V	500	31	0	3	4.0	-0.8	0.8
71600	12	V	500	29	0	0	3.2	0.4	0.3

```
 WMO   OBS               NUM    NUM     %
IDENT  TIME  ELM   LEV   OBS   GROSS   REJ     RMS    UBIAS   VBIAS

72201   00    V    500    26     0      0      5.2     0.3    -0.7
72201   12    V    500    25     0      0      2.4     0.8     0.2
72402   00    V    500    28     0      0      3.4    -0.1    -0.1
72402   12    V    500    29     0      0      2.0     0.0     0.2
74494   00    V    500    28     0      0      4.4    -0.9     0.2

74494   12    V    500    29     0      0      2.1    -0.4     1.4
```

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5,10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45